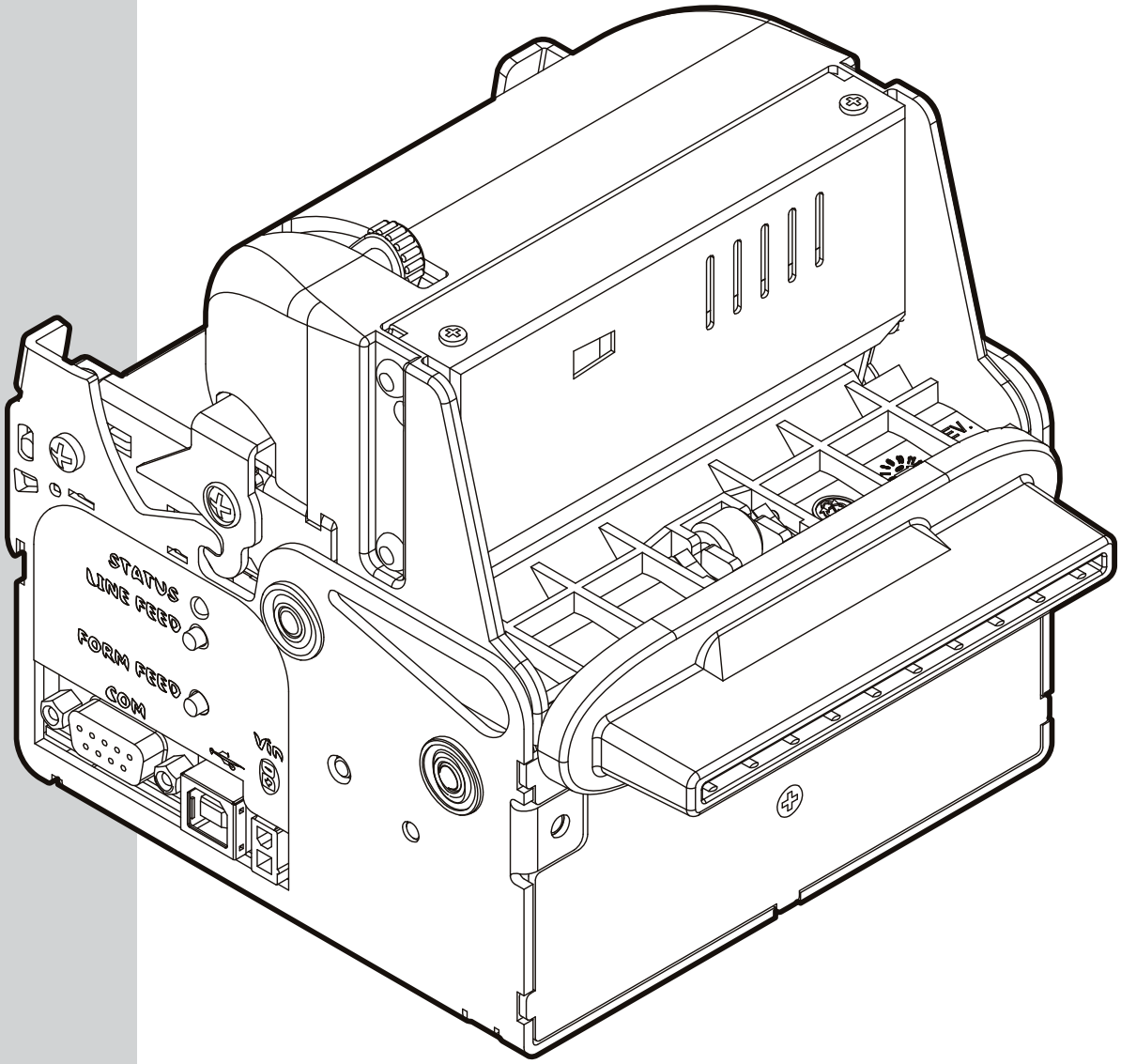
VKP80

USER MANUAL

OEM



Command Reference: **DOMC-0011e**

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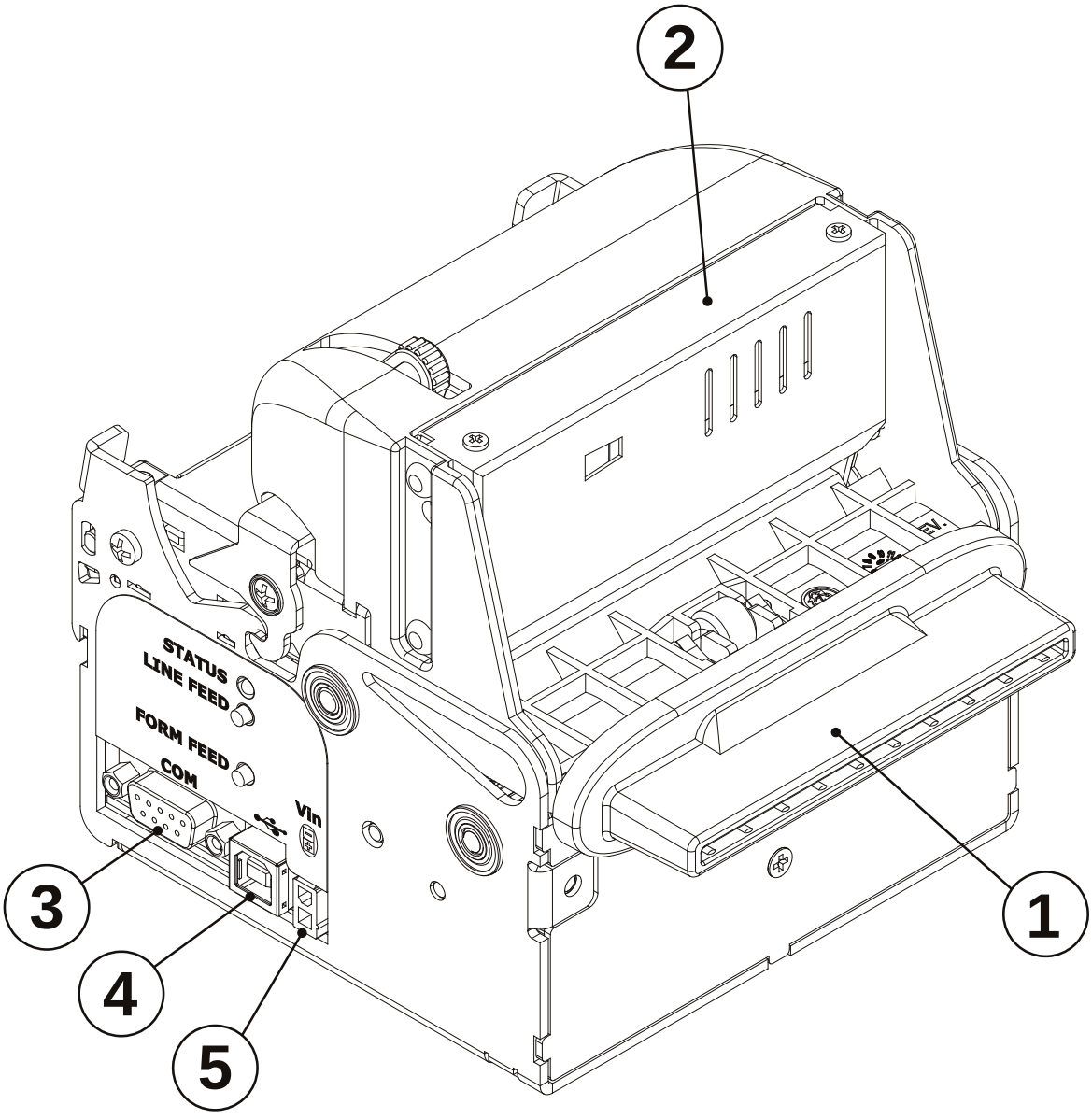
PRINTER COMPONENTS

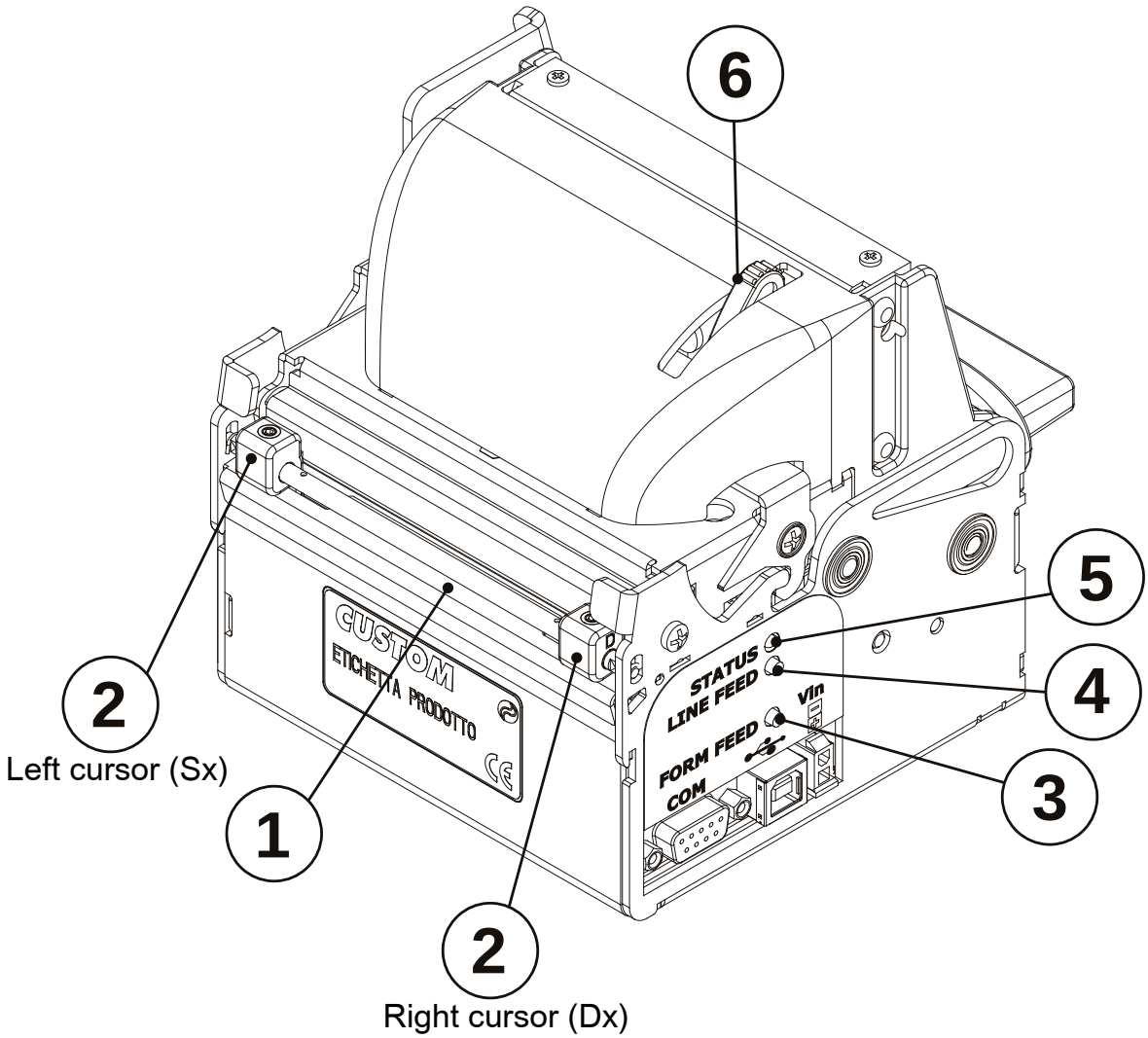
A. VKP80 - Front external view

1 - Output paper mouth
2 - Cutter
3 - Serial connector RS232
4 - USB connector
5 - Power supply connector



B. VKP80 – Rear external view

1 - Paper input
2 - Paper mouth cursor
3 - Form Feed key
4 - Line Feed key
5 - Status led
6 - Opening lever



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MANUAL CONTENTS

In addition to the Introduction which includes a description of the explanatory notes used in the manual, general safety information, how to unpack the printer and a brief description of the printer including its basic features, this manual is organized as follows:

Chapter 1: Contains the information required for correct printer installation and its proper use
Chapter 2: Contains information on interface specifications
Chapter 3: Contains technical specifications of the printer
Chapter 4: Contains the character sets (fonts) used by the printer

EXPLANATORY NOTES USED IN THIS MANUAL

N.B.
Gives important information or suggestions relative to the use of the printer.

WARNING
Information marked with this symbol must be carefully followed to guard against damaging the printer.

DANGER
Information marked with this symbol must be carefully followed to guard against operator injury or damage.

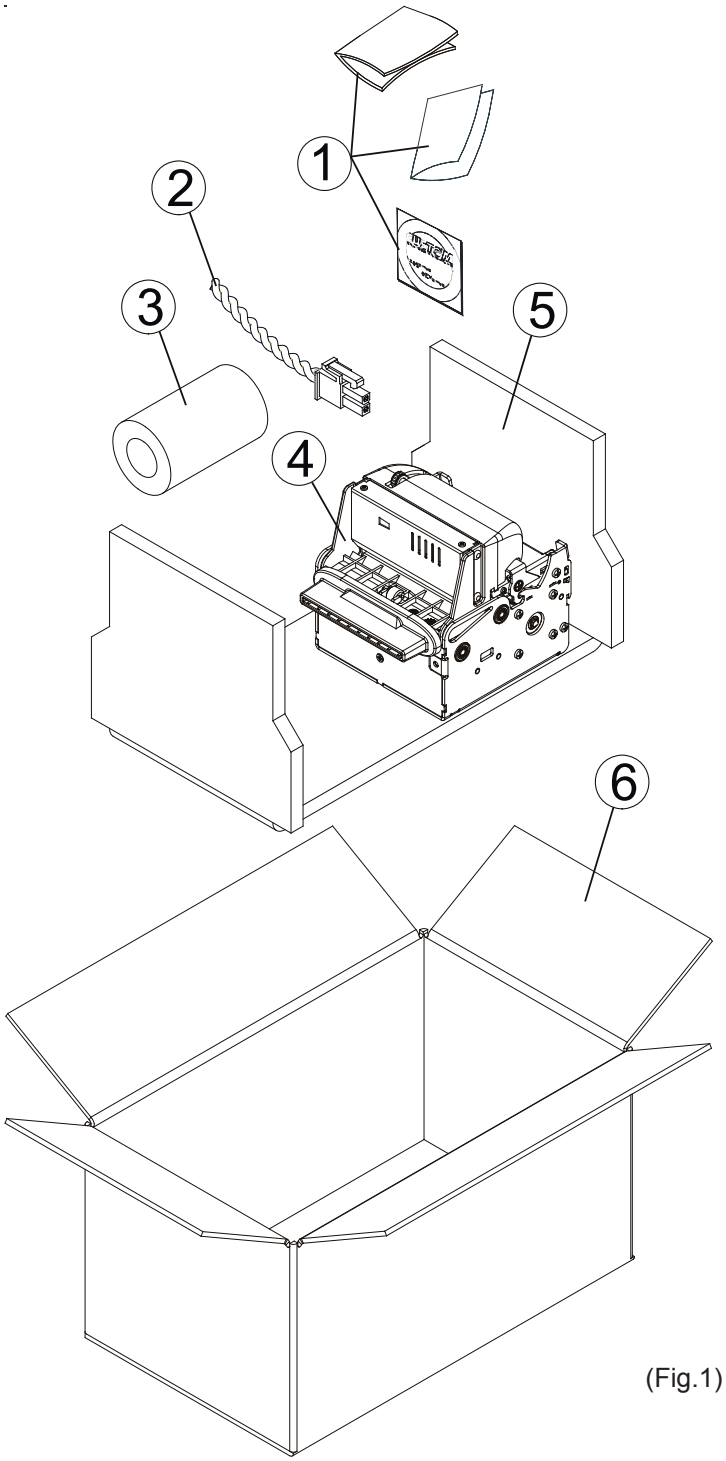
GENERAL SAFETY INFORMATION

- Read and keep the instructions which follow.
- Follow all warnings and instructions indicated on the printer.
- Before cleaning the printer, disconnect the power supply.
- Clean the printer with a damp cloth. Do not use liquid or spray products.
- Do not operate the printer near water.
- Do not use the printer on unstable surfaces that might cause it to fall and be seriously damaged.
- During the integration of the printer, we strongly warn to keep an adeguate paper loop outlet underneath the presenter, in order to allow the receipt being properly printed out.
- Only use the printer on hard surfaces and in environments that guarantee proper ventilation.
- Make sure the printer is placed in such a way as to avoid damage to its wiring.
- Use the type of electrical power supply indicated on the printer label. If in doubt, contact your retailer.
- Do not block the ventilation openings.
- Do not introduce foreign objects of any kind into the printer as this could cause a short circuit or damage parts that could jeopardize printer functioning.
- Do not spill liquids onto the printer.
- Do not carry out technical operations on the printer, with the exception of the scheduled maintenance procedures specifically indicated in the user manual.
- Disconnect the printer from the electricity supply and have it repaired by a specialized technician when:
    - A. The feed connector has been damaged.
    - B. Liquid has seeped inside the printer.
    - C. The printer has been exposed to rain or water.
    - D. The printer is not functioning normally despite the fact that all instructions in the users ma nual have been followed.
    - E. The printer has been dropped and its outer casing damaged.
    - F. Printer performance is poor.
    - G. The printer is not functioning.

UNPACKING THE PRINTER

Remove the printer from its carton being careful not to damage the packing material so that it may be re-used if the printer is to be transported in the future.
Make sure that all the components illustrated below are present and that there are no signs of damage. If there are, contact Customer Service.

1. Manual (or CD-Rom)
2. Electrical supply cable
3. Paper roll
4. Printer
5. Foam packing shell
6. Box



(Fig.1)

- Open the printer packaging
- Remove the paper roll
- Remove the manual (or CD-Rom)
- Remove the cable of power supply
- Take out the foam packing shell
- Take out the printer and remove it from its plastic covering.
- Keep the box, trays and packing materials in the event the printer must be transported/shipped in the future.

PRINTER FEATURES

VKP80 is the latest generation of ATMs, Kiosks and Ticket Printers with high printing speed 220mm/sec and a very small footprint; it's equipped with a 204 dpi (8 dots/mm) thermal printing mechanism.
In addition to normal printing functions, the printer offers a wide array of special features:

- High speed printing:

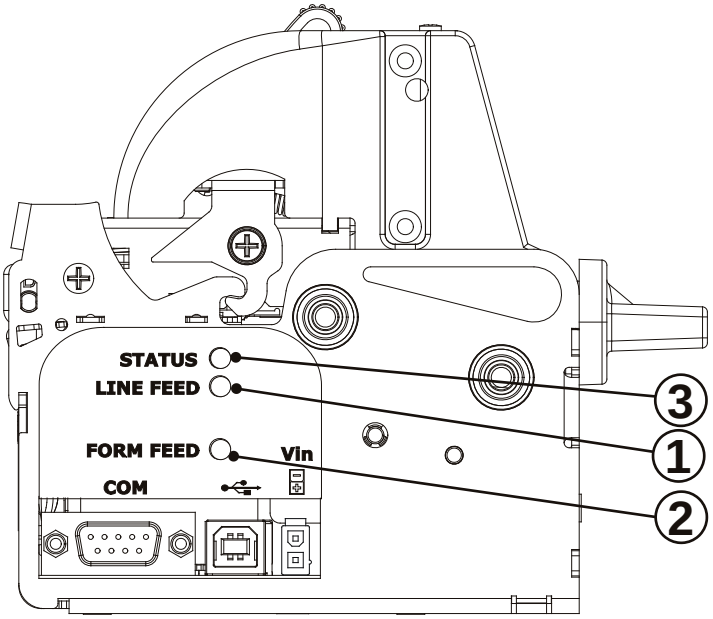
High Quality	80 mm/sec
Normal	180 mm/sec
High speed	220 mm/sec

- Easy paper changing (automatic paper loading).
- Paper width 60/76/80/82.5mm, adjustable by the user.
- Bar code UPC-A. UPC-E, EAN13, EAN8, CODE39, ITF, CODABAR, CODE93, CODE128 and CODE32.
- 3 standard and international character set fonts.
- Definition of function macros for automatic operation re-call.
- Graphic mode printing.
- Print density (-50% to +100%).
- Serial interfaces RS232: (from 1200 to 115200 bps)
- Interfaces: RS232, USB
- High reliability autocutter.
- Illuminated paper mouth.
- Paper pre-tensioner system for high capability paper roll.
- Double function ticket presentation: "ejecting" and "retracting".
- Sensors: paper end, ticket present, black mark, head temperature, opening of printing unit (near paper end on roll support is optional).

PRINTER DESCRIPTION

The printer (see fig.2) is comprised of a metal frame, printing mechanism, a cutter and an ejector.
Located on the keypad are the following keys: FORM FEED (1), LINE FEED (2) and status LED (3).

- LINE FEED key: When the LINE FEED key is pressed, the printer advances the paper so that the paper may be inserted in the printing mechanism. During power-up, if the LINE FEED key is held down, the printer enters the SETUP routine.
- FORM FEED key: When the FORM FEED key is pressed, the printer advances the paper by a pre-set length. During power-up, if the FORM FEED key is held down, the printer will perform the FONT TEST routine.
- STATUS LED: displays printer hardware status. In case of malfunction, the colour and flash frequency changing as follows:

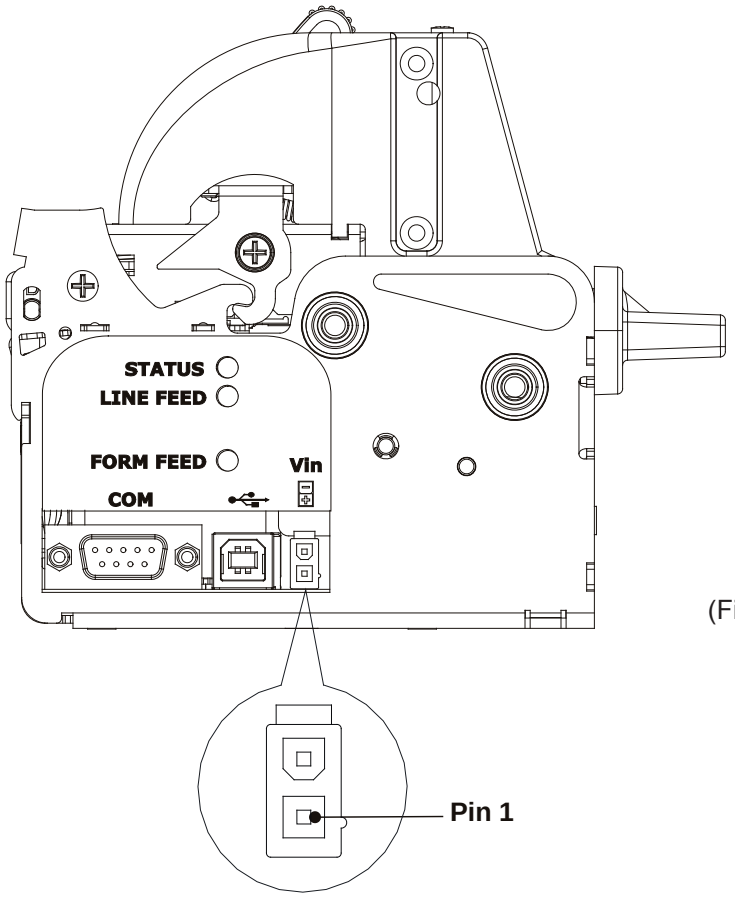


(Fig.2)

STATUS LED	COLOR	DESCRIPTION	
Turned on	Green	Printer on: no error	
Flashing	Green	**Communication status**	
		Nr. Flashings	Description
		1	Receive data
		2	Reception errors (parity, frame error, overrun error)
		3	Misinterpret command
		4	Command reception time out
Flashing	Yellow	**Recovering error**	
		Nr. Flashings	Description
		2	Heading over temperature
		3	Paper end
		4	Paper jam
		5	Power supply voltage incorrect
		6	Cover opened
Flashing	Red	**Unrecovering error**	
		Nr. Flashings	Description
		3	RAM error
		4	EEPROM error
		5	Cutter error

(Tab.1)

1.1 CONNECTIONS



(Fig.1.1)

1.1.1 Power Supply

The printer is equipped with a 2 pin male molex connector series 5569 (Vertical), for the power supply (see Fig. 1.1). The connector pin configuration is as follows :

Model no. type: Header : 90° Molex series 5569 (no. 39-30-1020)
Housing: Molex series 5557 (no. 39-01-3022)

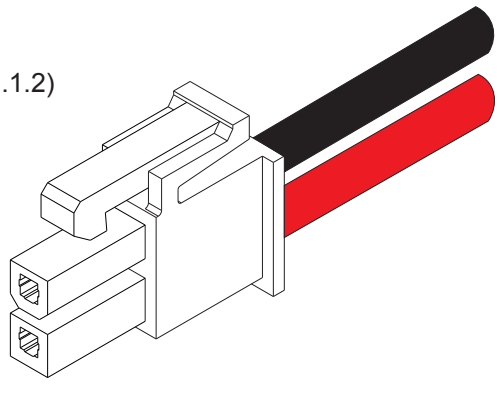
PIN	SIGNAL
1	+24 V
2	GND

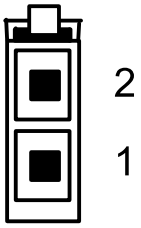
(Tab.1.1)

WARNING:
Respect power supply polarity.

This picture shows the power supply cable included in the printer packaging :

(Fig.1.2)





MOLEX FEMALE CONNECTOR 2 PIN

OPPOSITE VIEW SIDE OF CABLE INSERTION

The connector pin configuration of this cable is as follows:

Female connector	Cable color
Pin 1	RED
Pin 2	BLACK

(Tab.1.2)

Note : The red cable is for +24 Vdc.
The black cable is for signal ground.

1.2 SELF-TEST

Printer operating status is indicated in the configuration print-out in which, next to the name of the components displayed (see figure 1.3), the following information is given:

- Under INTERFACE is given the interface present (RS232).
- Under PROGRAM MEMORY TEST, DYNAMIC RAM TEST, EEPROM TEST and CUTTER TEST, the message OK appears if functioning and NOT OK if faulty.
- Under HEAD VOLTAGE is given the voltage of the head.
- Under HEAD TEMPERATURE is given the temperature of the head.
- Under PWM EJECTER is given the percentage value of duty-cycle applied to ejecter motor to obtain the desired speed.
- Under PAPER PRINTED is given the number of centimetres of paper printed.
- Under CUT COUNTER is given the number of cuts made.
- Under RETRACT COUNTER is given the number of retract made.
- Under POWER ON COUNTER is given the number of power-ups made.

PRINTER SETUP

INTERFACE RS232
PROGRAM MEMORY TEST.....OK
DYNAMIC RAM TEST.....OK
EEPROM TEST.....OK
CUTTER TEST.....OK
HEAD VOLTAGE [V] = 22,59
HEAD TEMPERATURE [°C] = 25
PWM EJECTER [%] = 24,5
PAPER PRINTED [cm] = 4970
CUT COUNTER = 256
RETRAC COUNTER = 0
POWER ON COUNTER = 136

RS232 Baud Rate .....: **115200 bps**
RS232 Data Length.....: **8 bits/chr**
RS232 Parity.....: **None**
RS232 Handshaking .....: **Xon/Xoff**
Busy Condition .....: **RxFull**
USB Address N. (1).....: **0**
USB Status Monitor (2) .....: **Enabled**
Autofeed .....: **CR disabled**
Print Mode .....: **Normal**
Chars / inch .....: **A=11 B=15 cpi**
Speed / Quality.....: **Normal**
Paper Retracting .....: **Disabled**
Notch Alignment .....: **Enabled**
Notch Threshold (3).....: **2.0 V**
Notch Distance [mm] (3).....: **32**
Current .....: **Normal**
Ejecter Resolution .....: **High**
Print Density.....: **0%**

[FF] *key to enter setup*
[LF] *key to skip setup*

(Fig.1.3)

NOTE:

(1) This parameter is displayed if the printer has an USB interface; it's used to identify univocally the USB printer by a numerical address code, if on the PC are connected two printers that are the same models for example two VKP80-UE.

(2) This parameter is displayed if the printer has an USB interface. The Status Monitor is an additional printing driver component that allows the printer status monitoring. It must be enabled only if it was installed the Status Monitor specific driver.

(3) If the "Notch Alignment" parameter is "Disabled" this parameter doesn't appear in the "Printer Setup" ticket.

1.3 CONFIGURATION

This printer permits the configuration of default parameters. The printer's configurable parameters are:

RS232 Baud Rate: 115200, 57600, 38400, 19200[D], 9600, 4800, 2400,1200.
RS232 Data length: 7, 8[D] bits/char.
RS232 Parity: None[D], Even, Odd.
RS232 Handshaking: XON/XOFF[D] , Hardware.
Busy condition: RxFullD , OffLine/RxFull[(4)].
USB Address Number: 0[D] , 1, 2, 3, 4, 5, 6, 7, 8, 9.
USB Status Monitor: Disabled[D] , Enabled.
Autofeed: CR disabled[D] , CR enabled.
Print mode: Normal[D] , Reverse.
Characters per inch: A=11 B=15 cpi, A=15 B=20 cpi[D].
Speed/Quality: High Quality, Normal[D], High Speed.
Paper retract [(5)]: Disabled[D] , Enabled.
Notch Alignment: Disabled[D] , Enabled.
Notch Threshold: 0.5, 1.0, 1.5, 2.0[D] ,2.5, 3.0, 3.5, 4.0, 4.5.
Notch Distance [mm] [(6)]: From 00[D] to 32mm.
Current: Low, High, Normal[D].
Ejecter Resolution: Low, High[D].
Print density: -50%, -37%, -25%, -12%, 0%[D], +12%, +25%, +37%, +50%.

Please note: the parameters marked with the symbol [D] represent the default values.

NOTE:

(4) Parameter valid only wth serial interface; using this parameter, it is possible to select whether the Busy signal is activated when the printer is both in Off Line status and the buffer is full, or only if the reception buffer is full.

(5) If, at power-up, paper is present on the ejector and if this parameter has been activated, the printer will retract the paper. Otherwise, if the parameter is deactivated, the printer will eject the paper.

(6) During the setup phase it's possible to set the notch distance using a values range from 0 to 39 mm. The maximum distance accepted is 32 mm, so even if values from 33 to 39 mm are inserted, the distance remains 32 mm.

The settings made are stored in EEPROM (nonvolatile memory).
During power-up, if the LINE FEED key is held down, the printer enters the autotest routine and prints out the setup report. The printer will remain in standby in Hexadecimal dump mode (see par.1.4) until another key is pressed or characters are received through the printer communication port.
When the FORM FEED key is pressed, the printer enters parameter configuration.
When the LINE FEED key is pressed, the printer exits setup and terminates the Hexadecimal dump function.
When the receive buffer is full, if handshaking is set to XON/XOFF, the printer sends the XOFF ($13) on the serial port.
When the receive buffer has cleared once again, if handshaking is set to XON/XOFF, the printer sends the XON ($11) on the serial port.

1.4 Hexadecimal dump

This function is used to display the characters received from the communications port; the printer prints out both the hexadecimal code received as well as the corresponding ASCII code.
Once the autotest routine has finished, the printer enters Hexadecimal Dump mode. The printer remains in standby until a key is pressed or characters are received from the communications port; for every 24 characters received it prints hexadecimal values and ASCII codes (if the characters appear underlined, it means the receive buffer is full). Shown below is an example of a Hexadecimal Dump :

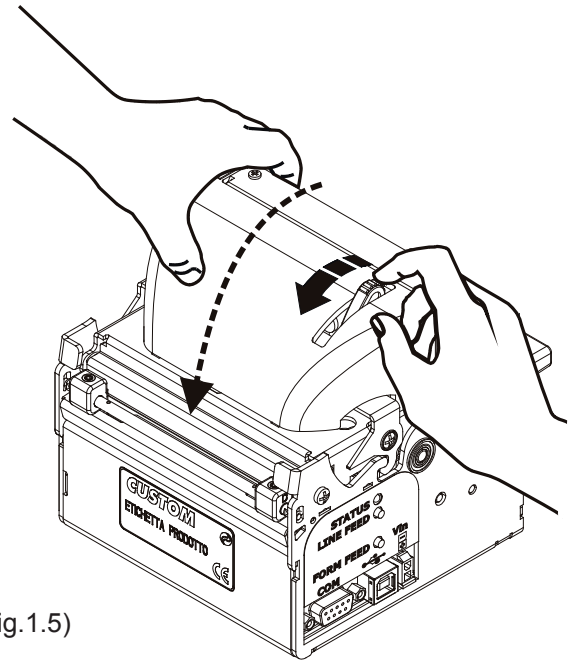
	HEXADECIMAL DUMP	ASCII DUMP
0x000000	48 65 78 61 64 65 63 69 6D 61 6C 20 64 75 6D 70 20 66 75 6E 63 74 69 6F	Hexadecimal dump functio
0x000018	6E 20 30 31 32 33 34 35 36 37 38 39 20 61 62 63 64 65 66 67 68 69 6A 6B	n 0123456789 abcdefghijk
0x000030	6C 6D 6E 6F 70 71 72 73 74 75 76 77 78 79 7A 2E	lmnopqrstuvwxyz.

(Fig.1.4)

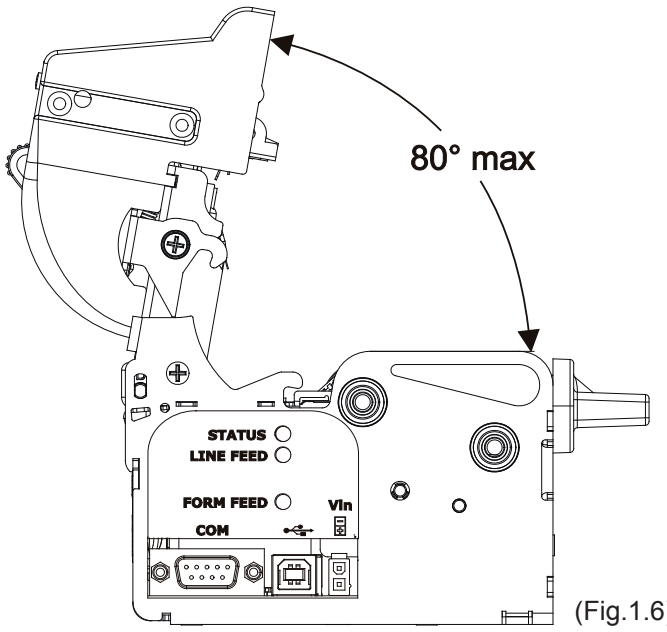
1.5 MAINTENANCE

1.5.1 Changing the paper roll

Each time you change the paper, check the inside of the printer.
While pushing the opening lever down, lift the head/cutter unit (see figs.1.5 and 1.6) until it locks into position.

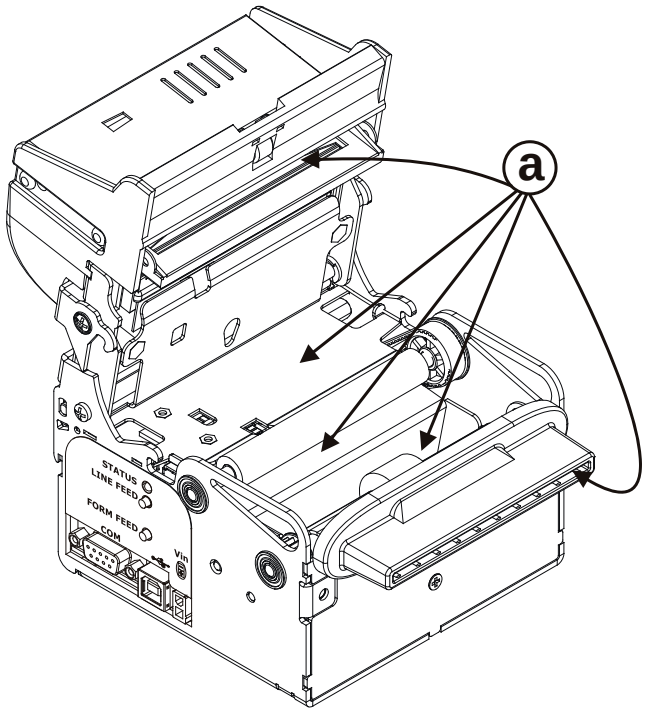


(Fig.1.5)



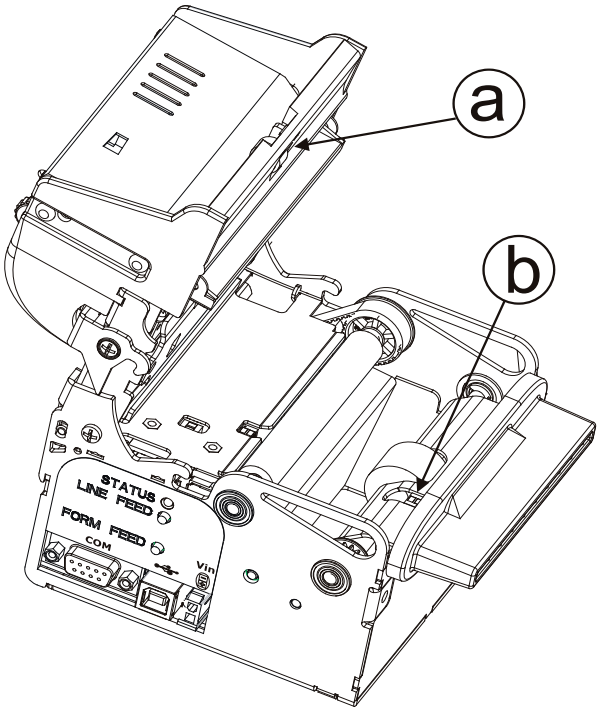
(Fig.1.6)

Check that there are no scraps of paper at the points indicated in fig.1.7 (a) on the paper infeed and outfeed openings, on the cutter opening or the ejector roller. If there are, remove the scraps before proceeding with any other operation.



(Fig.1.7)

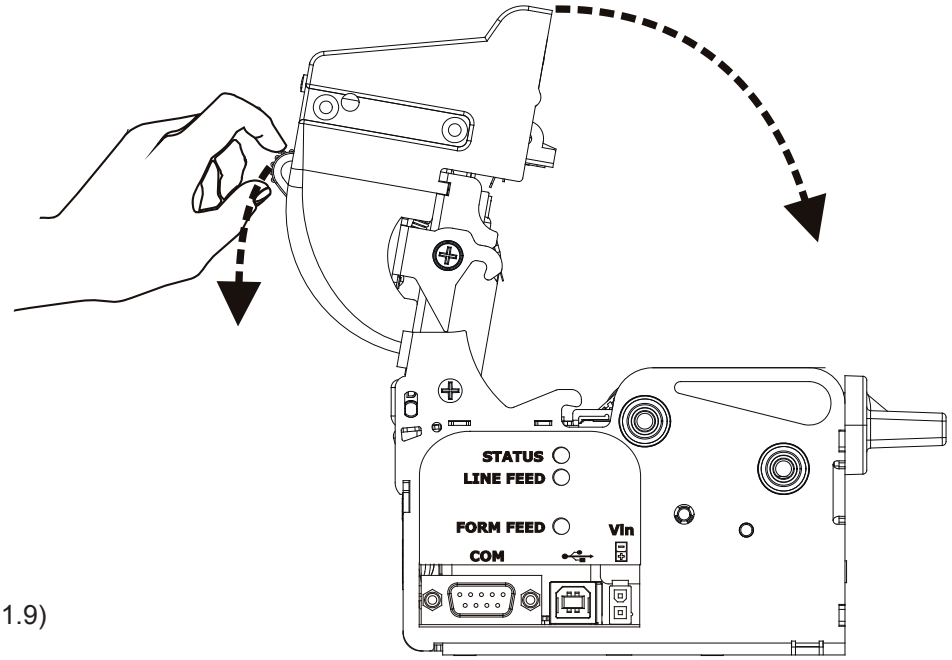
WARNING
Periodically remove accumulated paper dust from the upper plastic slide and the area around the paper outfeed sensor (see fig.1.8). To clean, do not use harsh chemical solvents; the use of a soft, alcohol-moistened cloth is recommended.



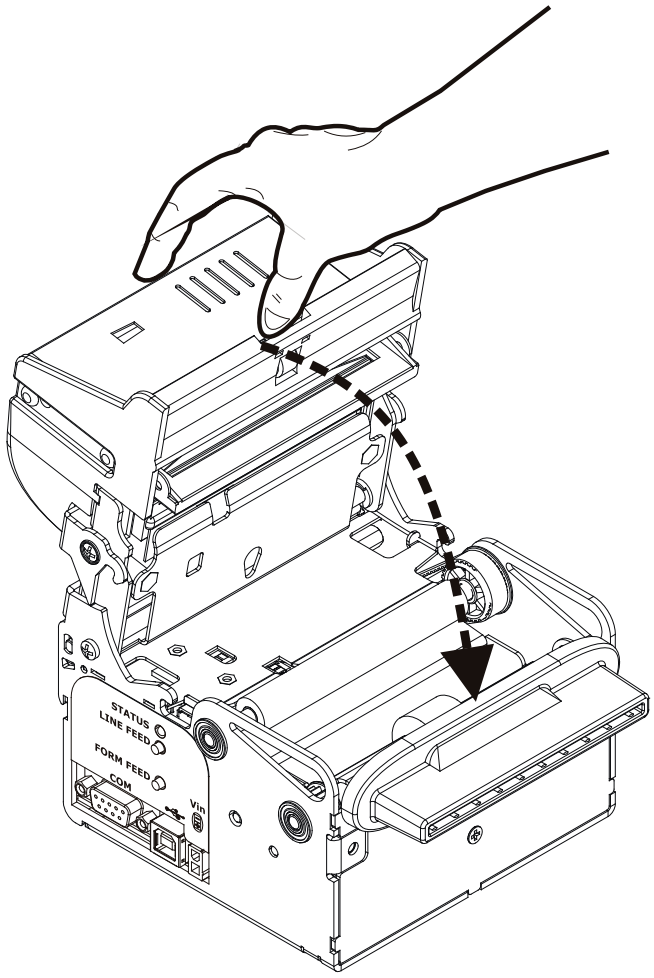
(Fig.1.8)

a = upper plastic slide
b = paper outfeed sensor

WARNING
To close the head/cutter unit:
1) push the opening lever down (see fig.1.9);
2) lower the head/ cutter unit and press hard in the position shown in fig.1.10.



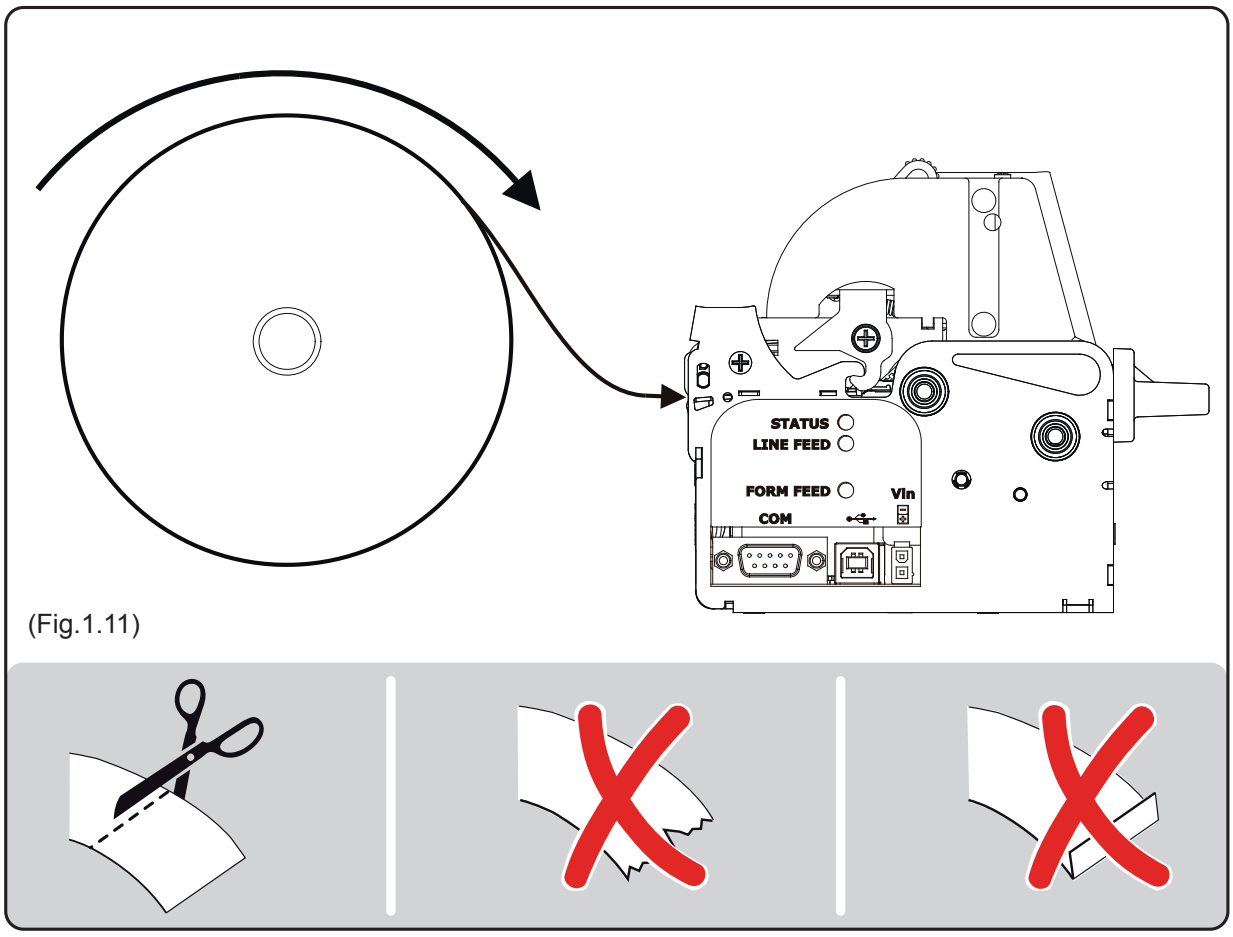
(Fig.1.9)



(Fig.1.10)

To change the roll of paper, proceed as follows:

1. Position the paper roll so that it unrolls in the direction shown in fig.1.11.
2. Insert the paper into the paper infeed opening and wait for it to load automatically (see fig.1.11).

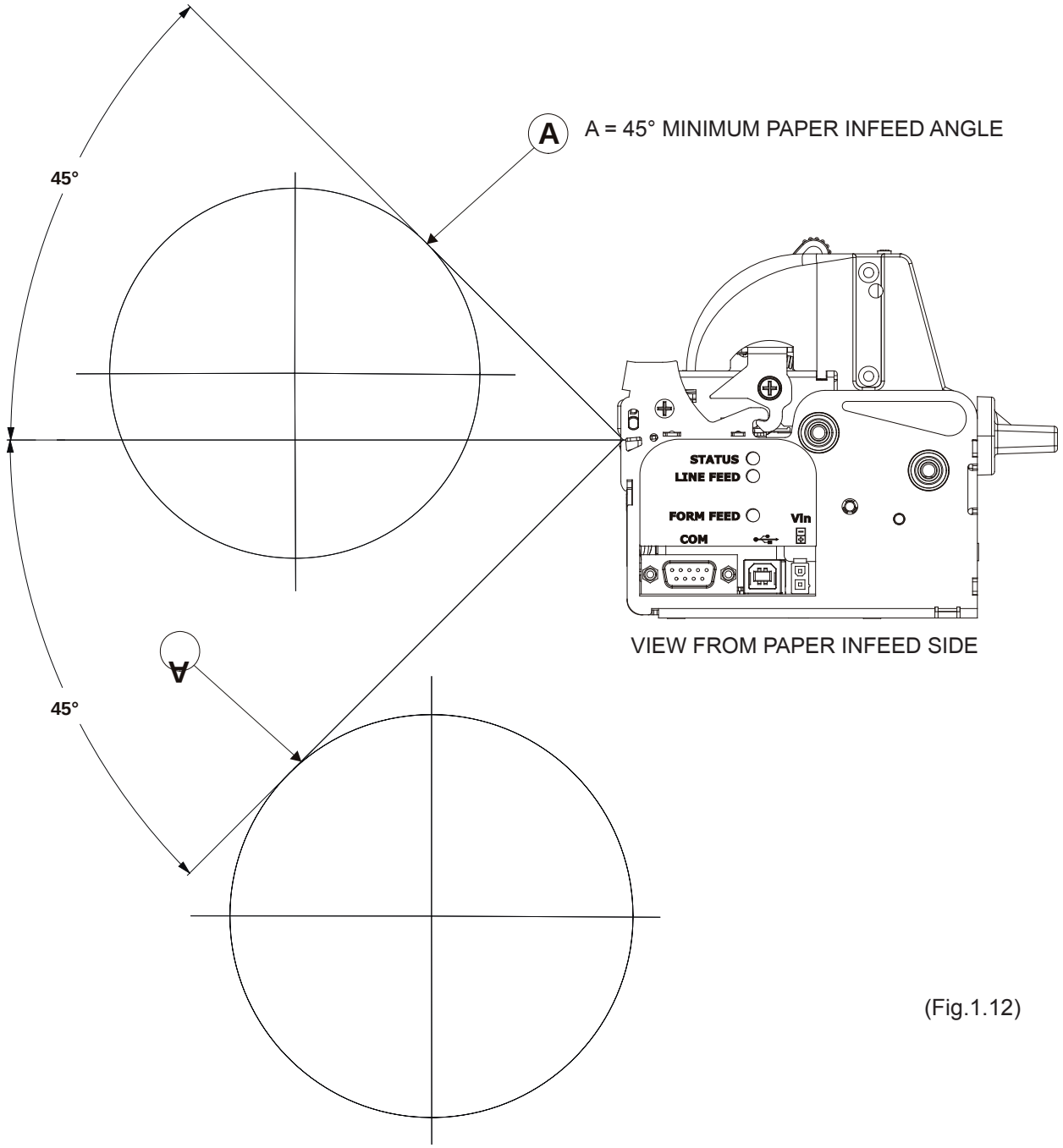


(Fig.1.11)

WARNING
Before inserting the paper, make sure the cut is straight.

1.5.2 Paper loading specification

Fig.1.12 gives alignment specifications for correct paper loading if no roll holder support is present:



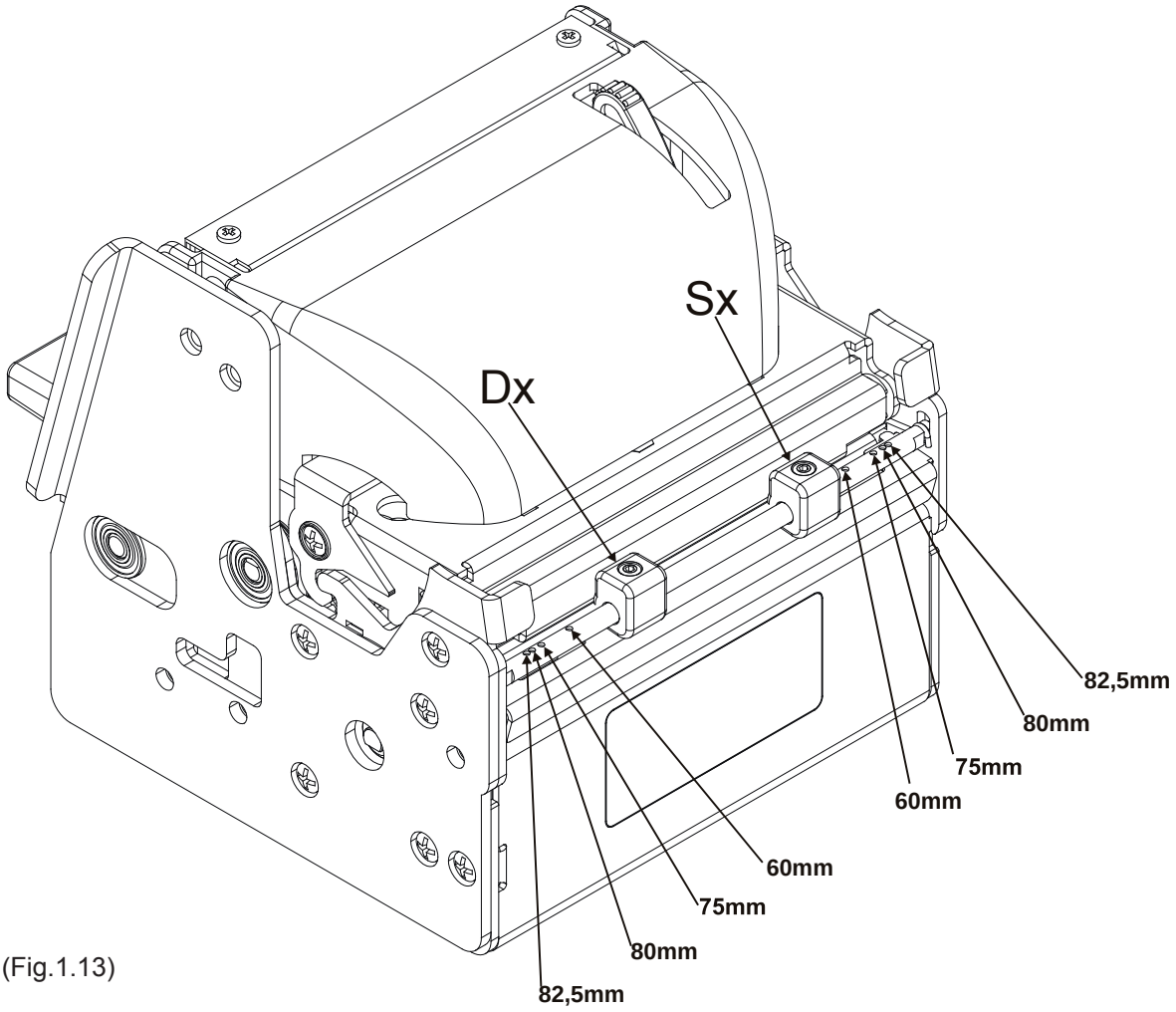
(Fig.1.12)

1.5.3 Ticket specifications

Paper with alignment notches may be used; referred to Appendix B on this manual to see the ticket specifications and management of notch alignment.

1.5.4 Adjusting paper width

Paper width may be adjusted to four different positions (60mm, 75mm, 80mm and 82.5mm), using the right (Dx) and Left (Sx) slides located at the paper infeed opening (see fig.1.13).

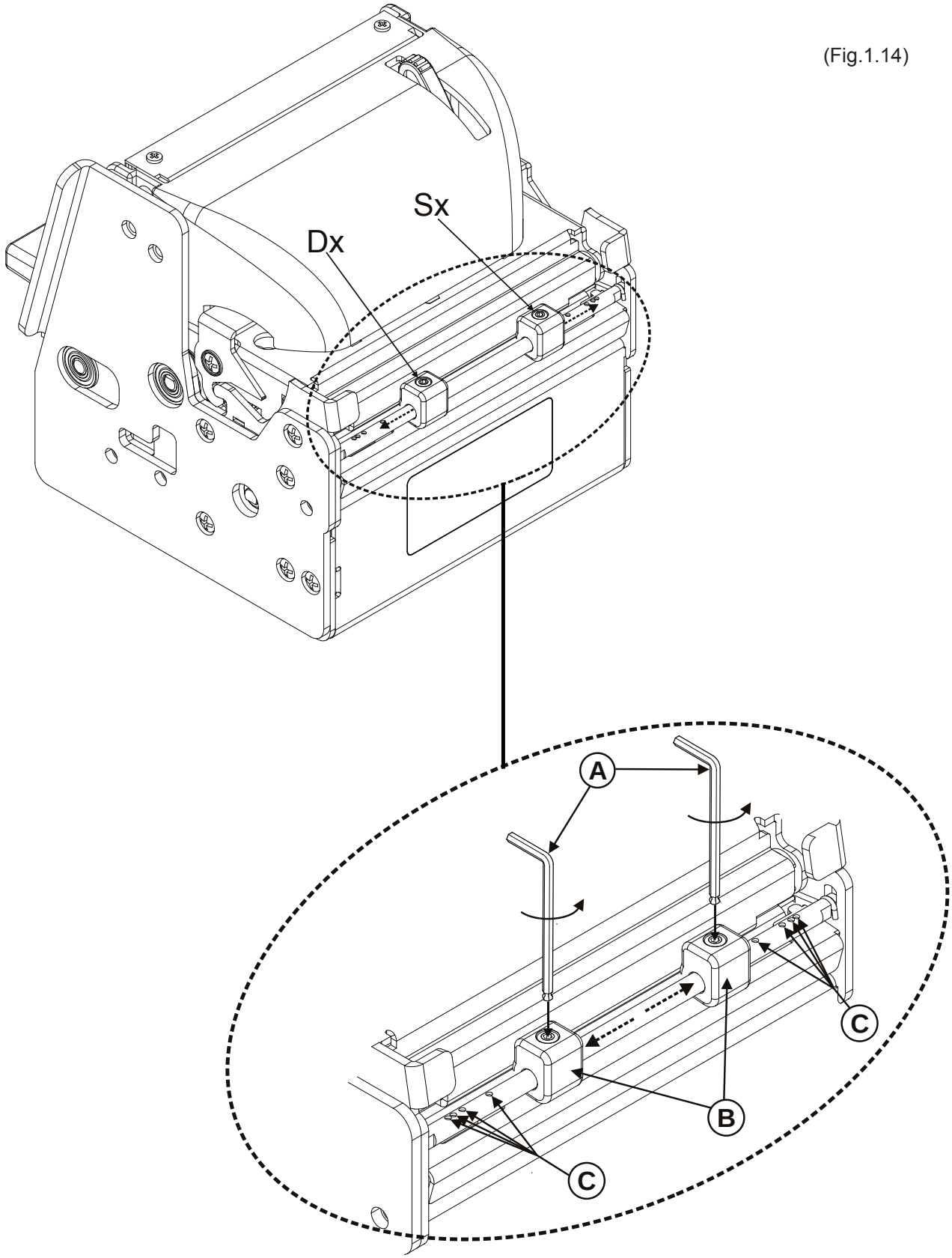


(Fig.1.13)

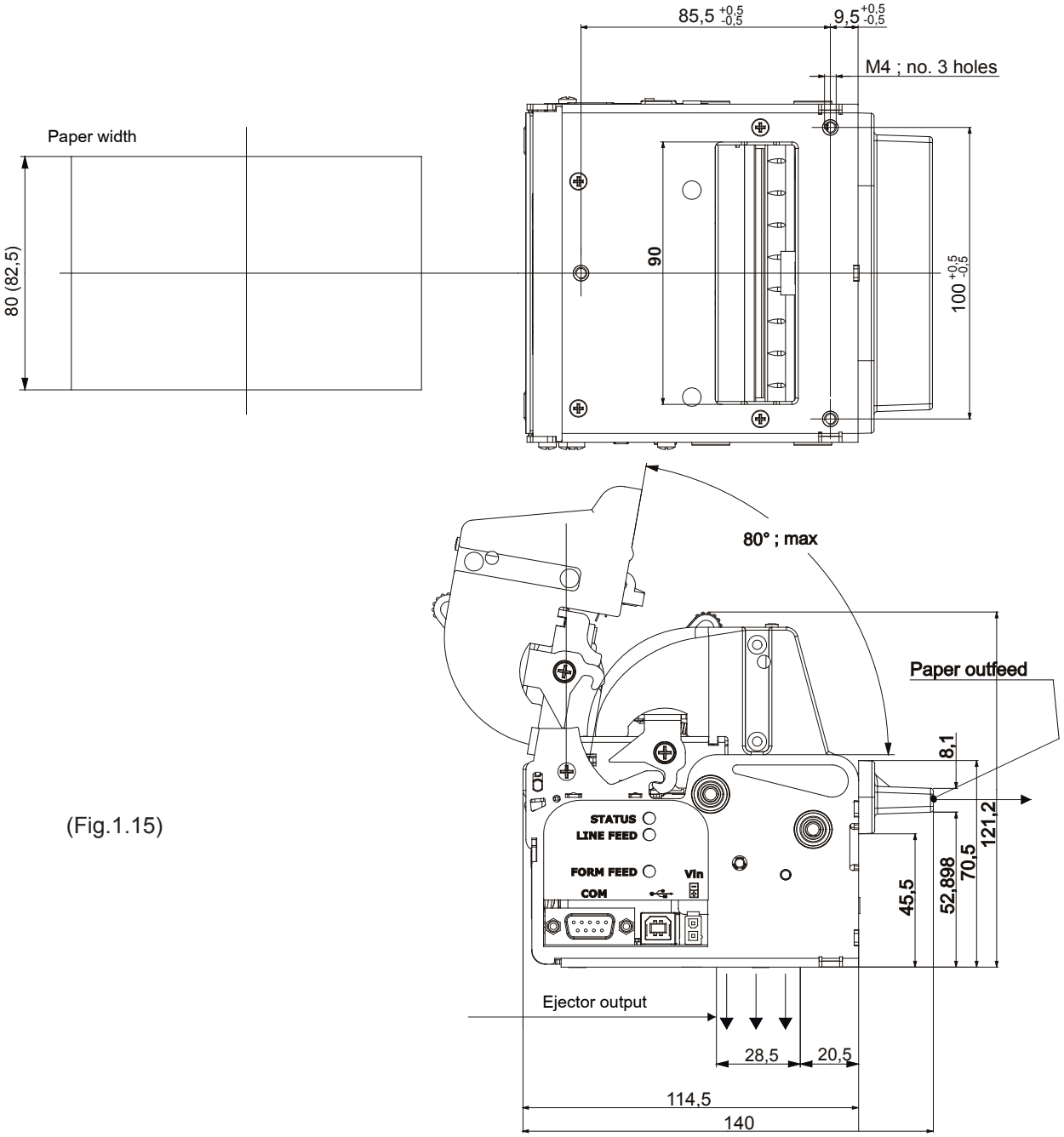
To adjust paper width, proceed as follows using fig.1.14 as a reference:

- Using an Allen wrench (A), at the paper infeed opening loosen the fastening pins located inside the right and left slides (B) to release them.
- Position the right and left slides (B) to correspond to the paper width desired, using as a reference the holes on the guide (D) (see fig.1.14).
- Again using the Allen wrench, re-tighten the fastening pins of the right and left slide.

(Fig.1.14)



1.5.5 Notes for installation and use of printer with retracting



(Fig.1.15)

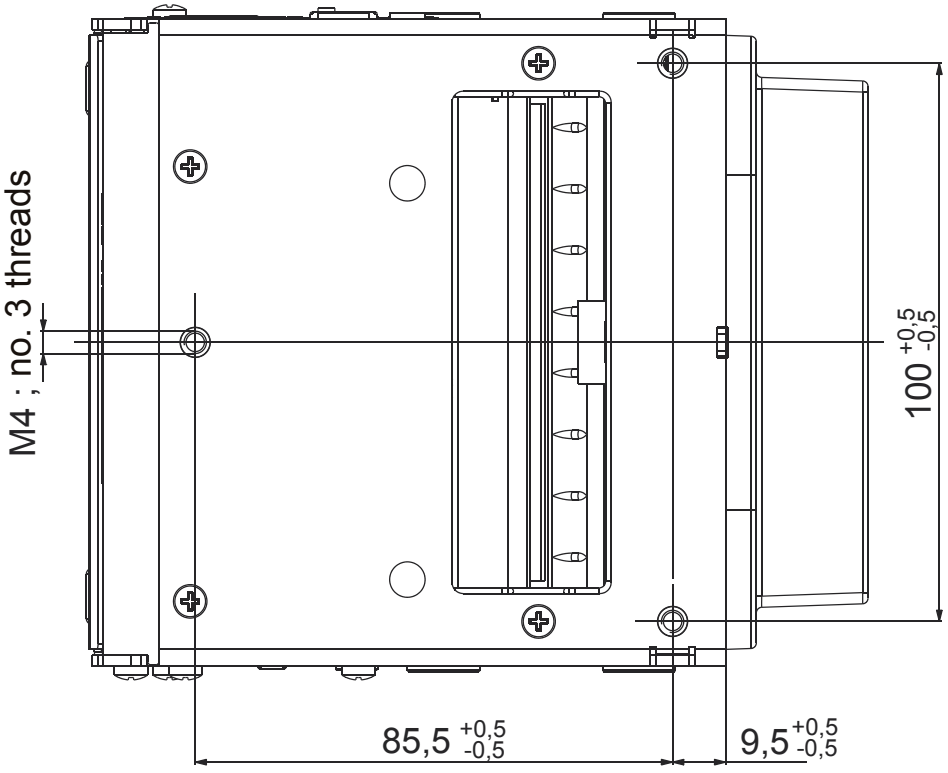
N.B.: "Ejector outfeed": When assembling the printer on the machine, be sure to leave adequate space for the paper loop below. If this is not done, the ticket could crease at the cutting area, causing the ticket to jam in the paper outfeed opening.

In the following table are reported the length recommended for the tickets using of the retracting function:

TICKET LENGTH	TICKET PRESENTATION (MAX)
70 mm	10 mm
80 mm	10mm ÷ 30mm
80mm ÷ 220mm	10mm ÷ 30mm

1.5.6 Notes for installation and lower fastening of printer

Three fixing points (bottom)



(Fig.1.16)

ATTENTION
It's very important to consider the screws length to not damage the internal sensor board near the lower fixing holes (see fig. 1.17).

On the basis of panel thickness calculate the screws length as follows :

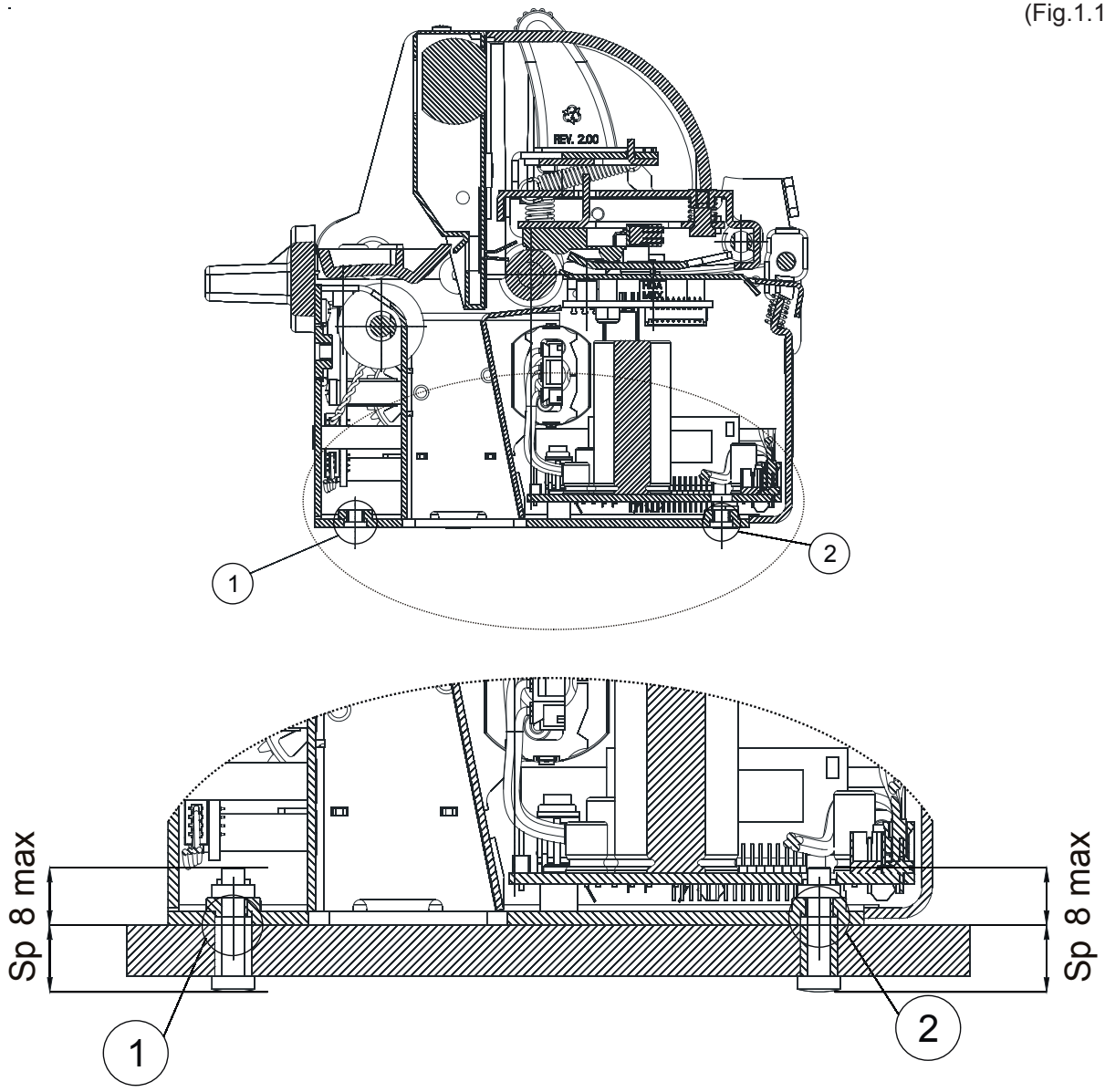
$$Lv \leq Pn + Sp$$

where

Lv : indicates screw length
Pn : 8 mm
Sp : panel thickness

For example if panel thickness is 10mm (Sp = 10mm) the max screw length will be 18mm.

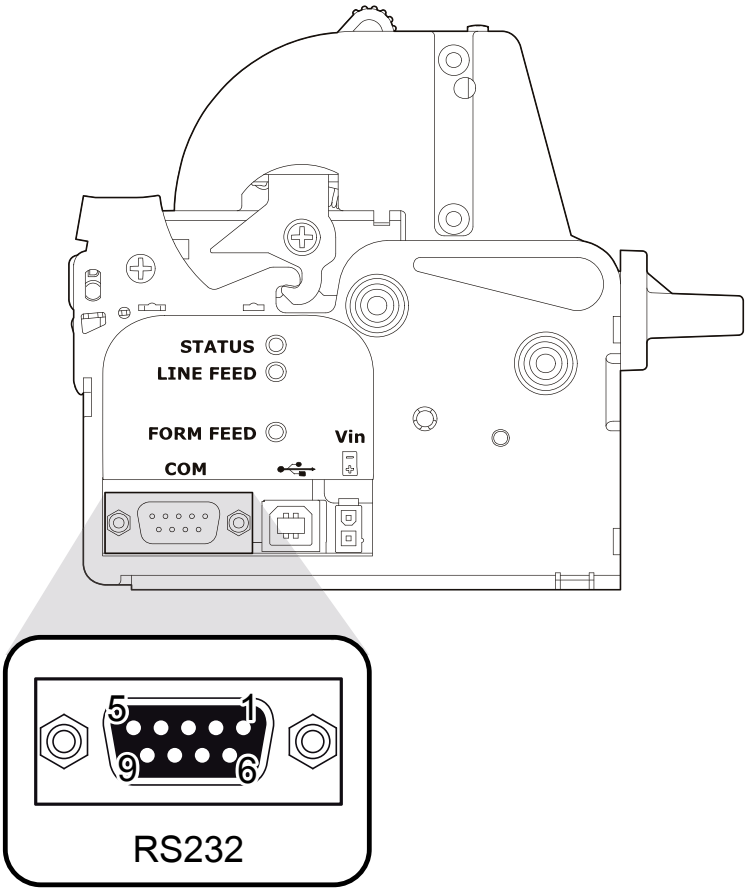
(Fig.1.17)



N.B.: The reference 1 indicates the screws that must located in the two external holes in front of the printer; the reference 2 indicates the screw that must located in the centre hole of the rear side of the printer.

2.1 SERIAL INTERFACE

The printer has an RS232 interface with 6-pin female connector. Refer to the table below for the connector pin signals:



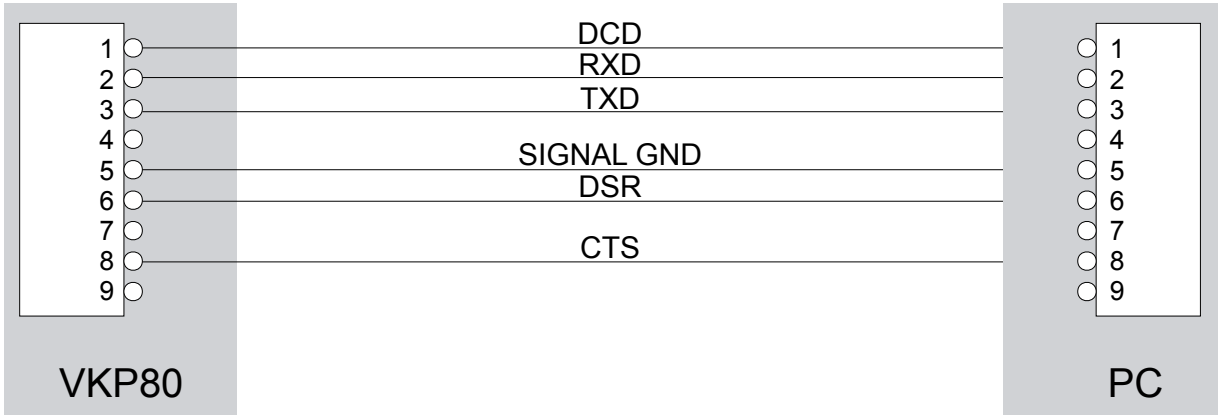
(Fig.2.1)

(Tab.2.1)

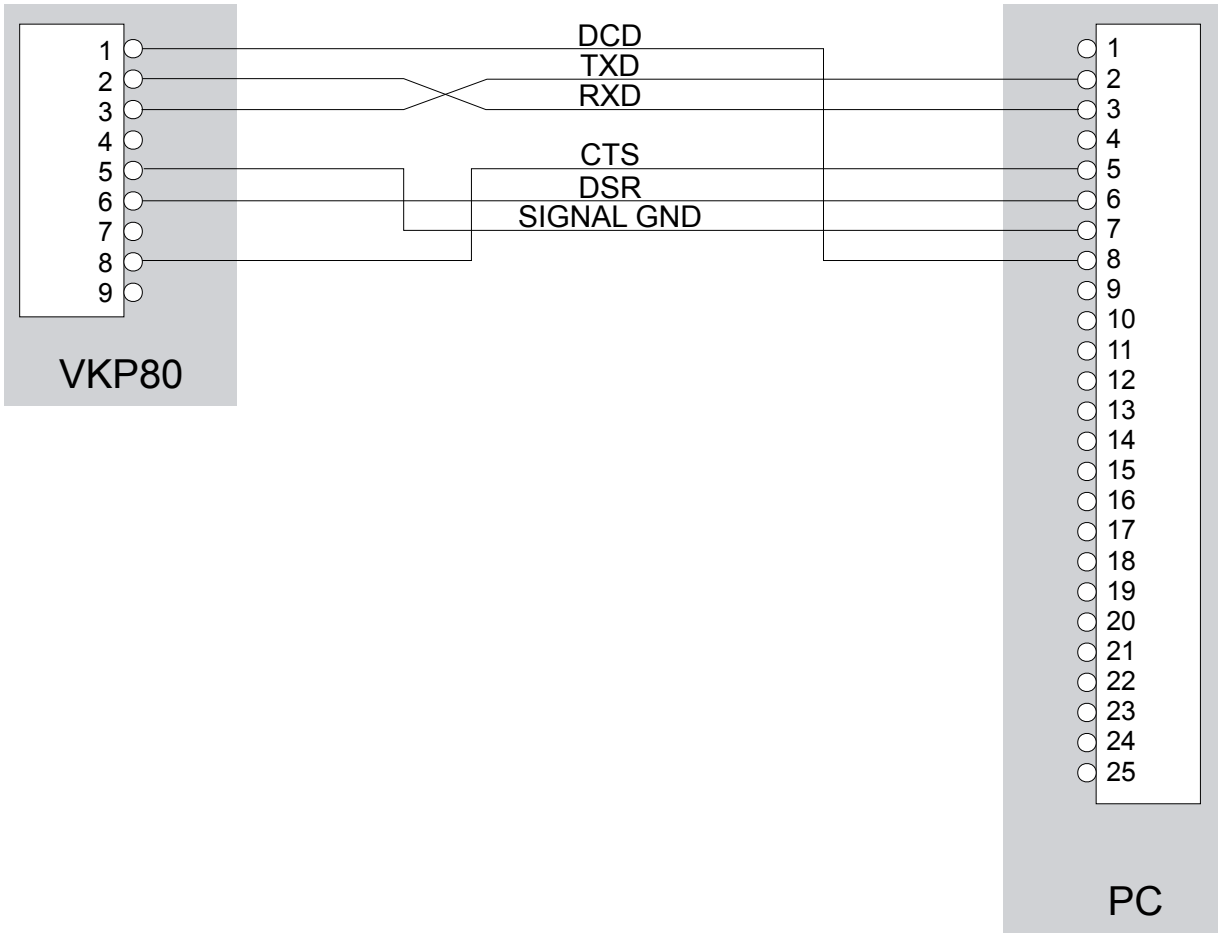
PIN	SIGNAL	IN/OUT	TO	DESCRIPTION
1	DCD	OUT	DCD	Individuation Data Carrier. Printer on (active with RS232 high level)
2	TXD	OUT	RXD	Transmit data. Serial output (from the host)
3	RXD	IN	TXD	Receive data. Serial input (to the host)
4	N.C.	-	N.C.	Not connected
5	GND	-	GND	Ground signal
6	DSR	OUT	DSR	Ready to send. Ready on and operational (active with level high)
7	N.C.	-	N.C.	Not connected
8	RTS	OUT	CTS	Ready to send. Ready to receive data (active with level high)
9	N.C	-	N.C.	Not connected

The diagrams below illustrate a sample connection between the printer and PC using a 9-pin female connector.

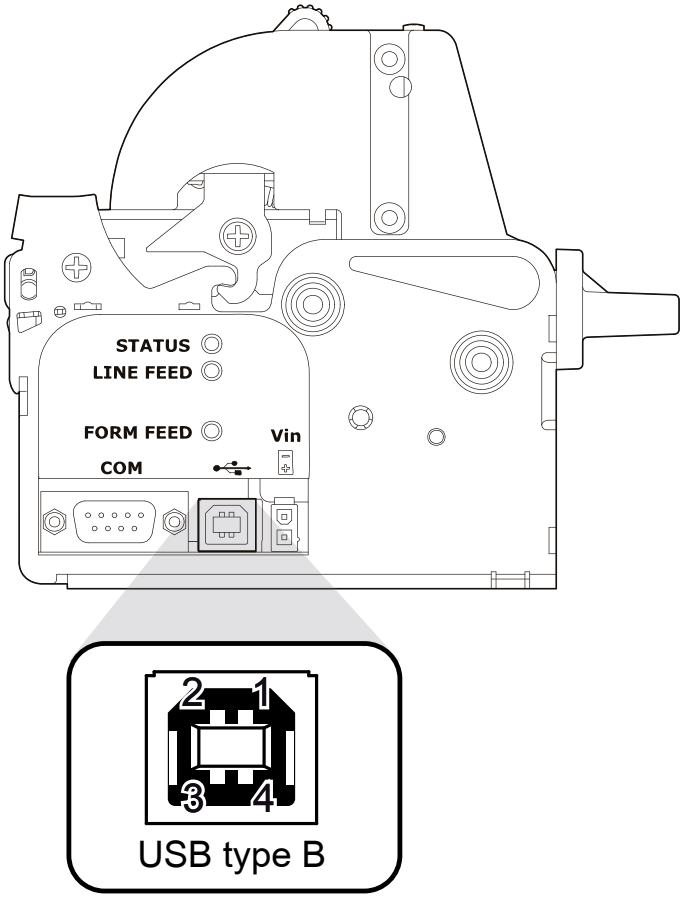
(Fig.2.2)



(Fig.2.3)



2.2 USB INTERFACE



(Fig.2.4)

Printers with USB serial interface conform to USB 1.1 standards and have the following specifications:

- Communication speed 12 Mbit/sec
- “Receptacle series B” - type connector.

Refer to the table below for the connector pin signals and connection to a device:

PIN	SIGNAL	DESCRIPTION
1	VBUS	N.C.
2	D-	Data -
3	D+	Data +
4	GND	Ground signal
Shell	Shield	Cable shield

(Tab.2.2)

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3.1 TECHNICAL SPECIFICATIONS

Table 3.1 gives the main technical specifications for the 204 dpi printer model.

(Tab.3.1)

Print method	Thermal, fixed head (8 dot/mm)	
Resolution	204 DPI (8 dot/mm)	
Paper specifications		
Type of paper	Thermal rolls Heat-sensitive side on outside of roll	
Recommended types of paper	from 55 g/m² to 90 g/m² (KANZAN)	
Width	60 / 76 / 80 / 82,5 mm	
Internal roll core diameter	25 mm	
External roll diameter (1)	max Ø130 mm (2) max Ø180 mm (3)	
Core type	Cardboard or plastic	
Sensors	Head temperature, black mark, paper presence, ticket presence on output, opening of printing unit, (near paper end on roll support is optional)	
Printing mode	Straight, 90°, 180°, 270°	
Printing format	Height/Width from 1 to 8, bold, reverse, underlined, italic	
Character fonts	PC437, PC850, PC860, PC863, PC865, PC858.	
Available interfaces	RS232	USB
Baud rate	From 1200 to 115200 bps	
Receive buffer	16 Kbytes	
Flash memory	384 Kbytes	
Graphics memory	2 logos of 608 x 862 dots (for 80/82.5mm paper width)	
Printing Driver	Windows™ 95, 98, ME, NT4, 2K, XP, Linux	
Dimensions	Length [mm] = 115 Height [mm] = 115 Width [mm] = 115	
Weight (2)	2117 gr.	
Printing speed		
High quality	80 mm/sec	
Normal	180 mm/sec	
High speed	220 mm/sec	

NOTE:

(1) It's better to use an external shock absorber for rolls with a diameter higher than or equal to 100 mm.

(2) Referred to models with paper holder support.

(3) Referred to models without paper roll holder support; for 180 external roll diameter is guaranteed the paper pulling.

Power supply	24 Vdc ± 10% (optional external power supply)		
Absorption (current setting = Normal)			
Stand-by	0.1 A		
Medium (100% dot ON)	4.5 A		
Peak (100% dot ON)	5.5 A		
Environmental conditions			
Operating temperature	0°C - 50°C		
Relative humidity	10% - 80% w/o condensation		
Storage temperature / Humidity	-20°C - 70°C / 10% - 90%		
OPTIONS	Roll holder support		
Emulation	ESC/POS™		
Character density	**11 cpi**	**15 cpi**	**20 cpi**
Number of columns	88	123	160
Chars / sec	1760	2460	3200
Lines / sec	20	20	20
Characters			
Normal	2,25x3	1,625 x 3	1,25 x 3
Retracting function			
Ticket length	**Ticket presentation**		
70 mm	10 mm		
80 mm	10 mm - 30 mm		
80 mm - 220 mm	10 mm - 30 mm		
Ejecting function			
Ticket length	**Ticket presentation**		
60 mm	10 mm		
> 80 mm	10 mm - 30 mm		
350 mm (4)	10 mm - 30 mm		

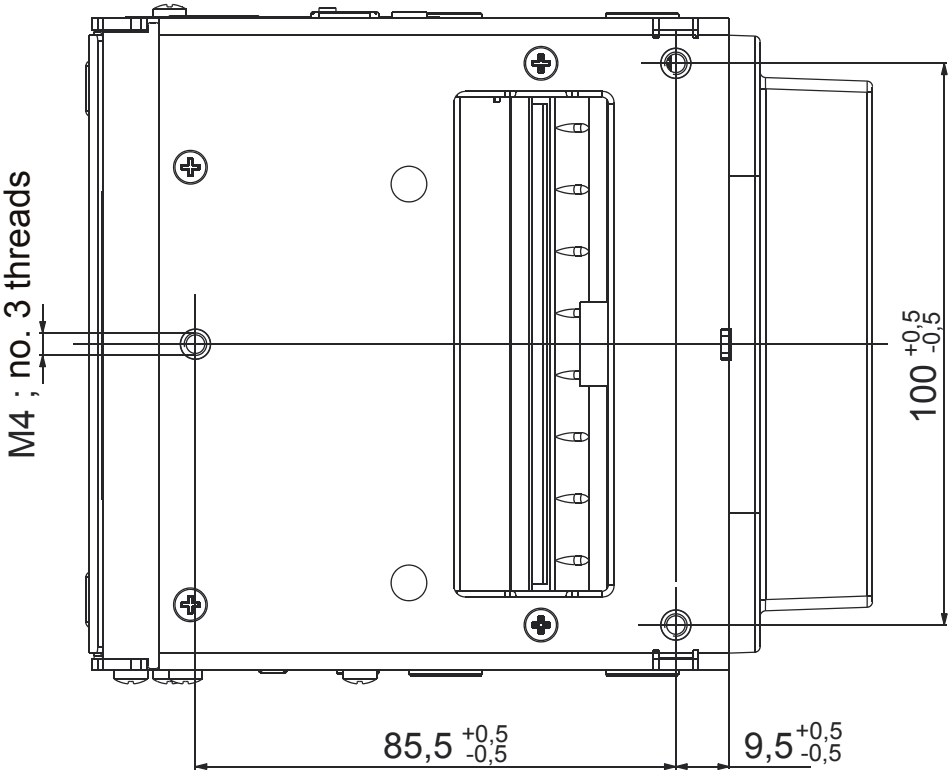
NOTE:
(4) Maximum length recommended to guarantee the printer efficiency.

3.2 DIMENSIONS

In the following figures shows the dimensions of the printer.

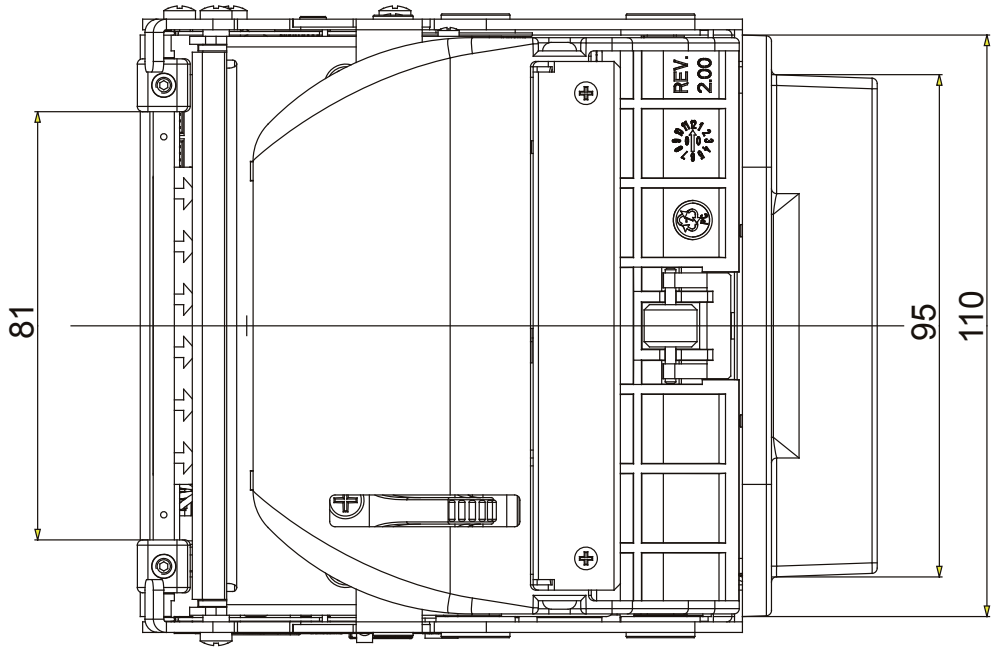
Bottom view

Three fixing points
(bottom)



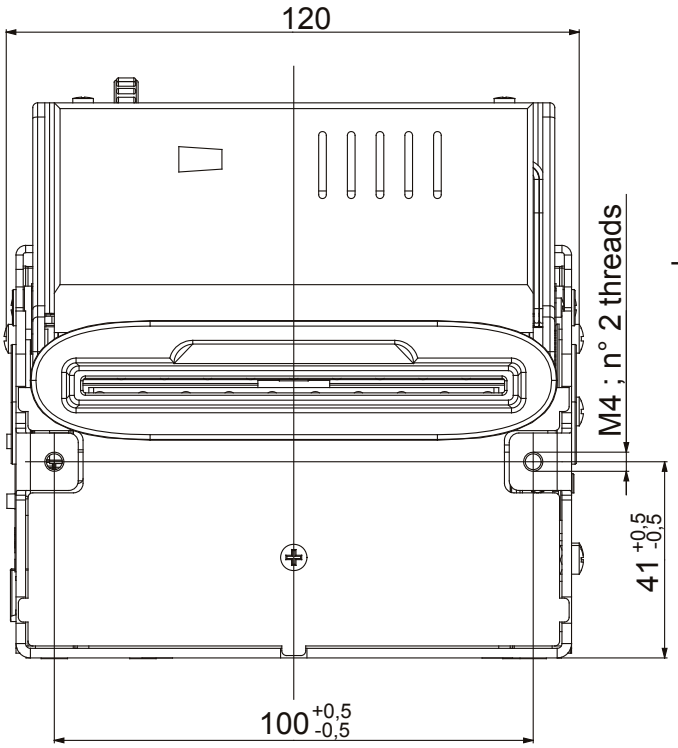
(Fig. 3.1)

Top view



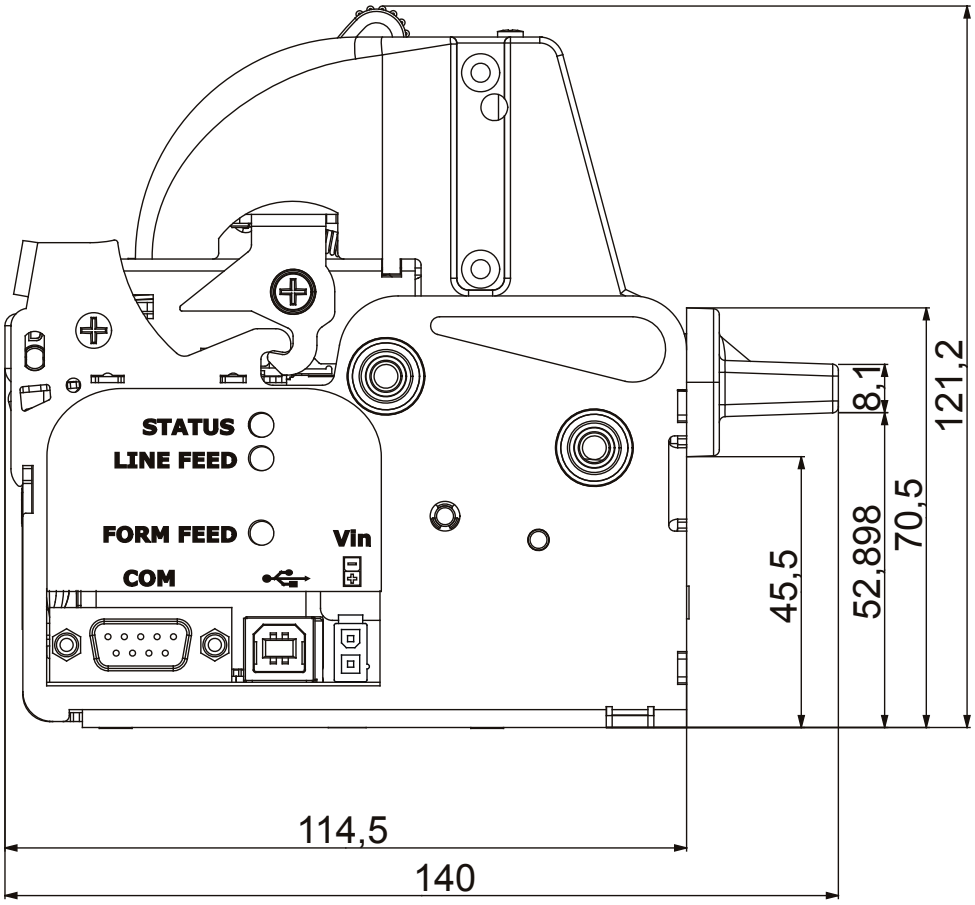
(Fig. 3.2)

Front view



(Fig. 3.3)

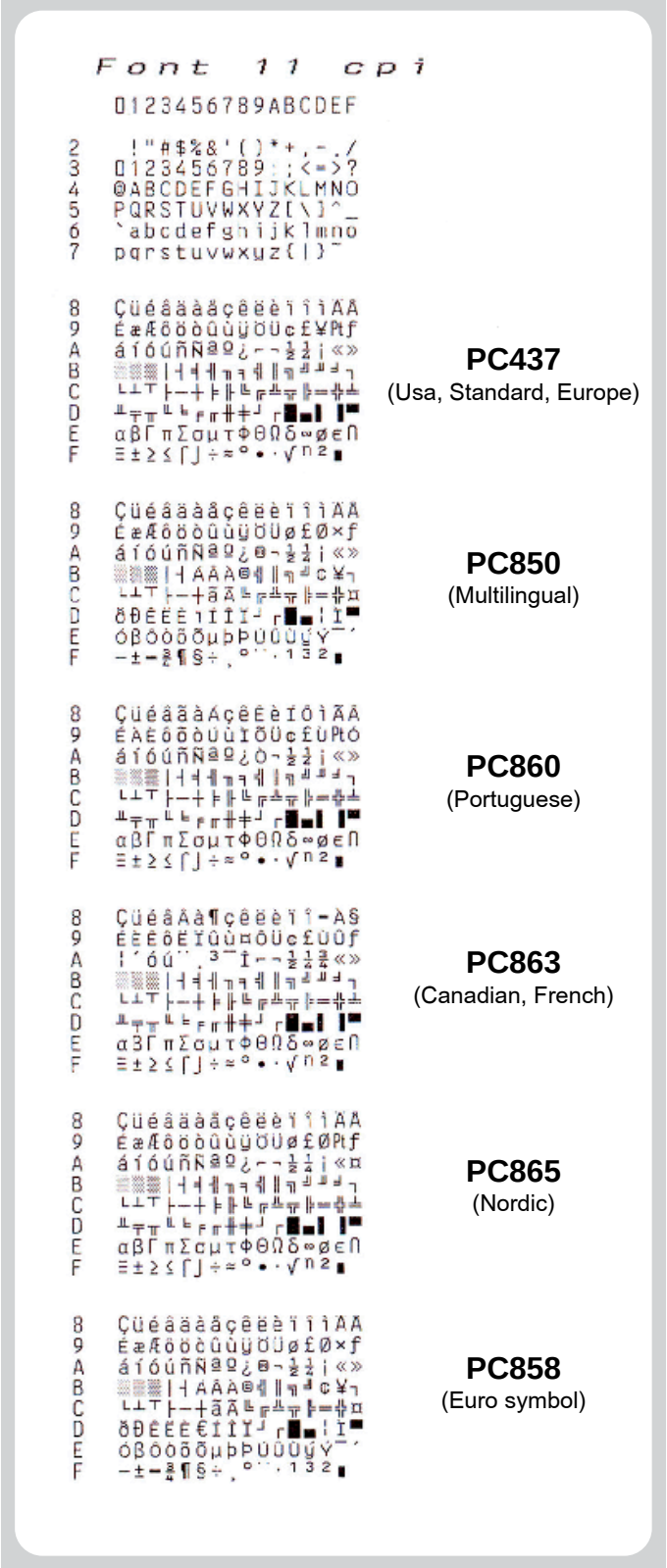
Left side view (SX)



(Fig. 3.4)

4.1 CHARACTER SETS

The printer has 3 fonts of varying width (11, 15 and 20 cpi) which may be accessed through programming (section 1.2) or control characters. Each of these fonts offers the following code tables: PC437, PC850, PC860, PC863, PC865, PC858. Shown below in figures 4.1 are examples of the 11 cpi character set.



(Fig.4.1)

To print the Euro (€) symbol, the command sequence is: $1B, $74, $13, $D5.

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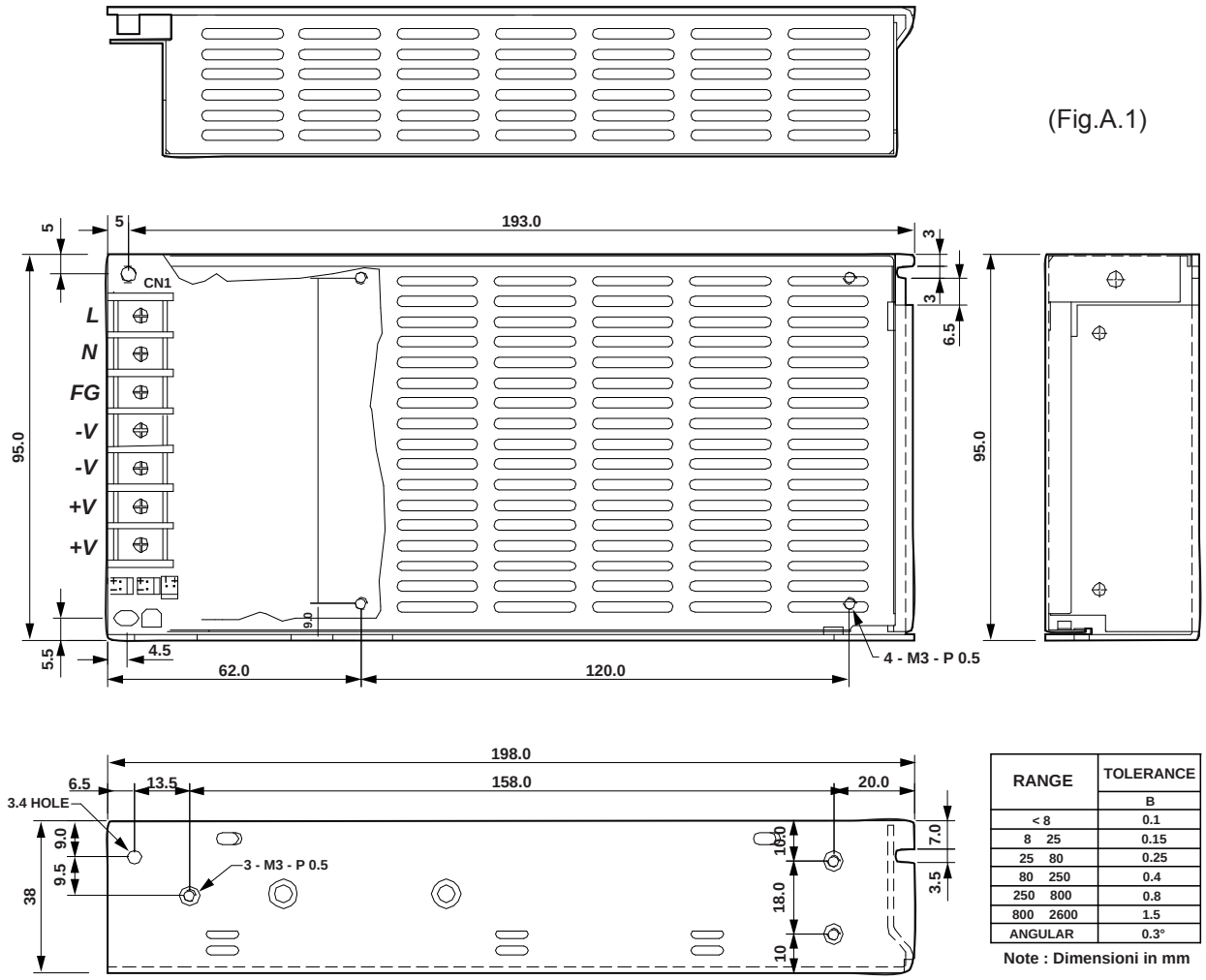
A.1 ACCESSORIES

A.1.1 Power Supply

The figure below illustrates the power supply provided by Custom to be used for printer operation.



(Fig.A.1)

RANGE	TOLERANCE
	B
< 8	0.1
8 25	0.15
25 80	0.25
80 250	0.4
250 800	0.8
800 2600	1.5
ANGULAR	0.3°

Note : Dimensioni in mm

(Tab.A.1)

PPSPS-100-24V	Switching power supply 24V 100W	
Input specification	Input voltage	85V ÷ 264V
	Current	0A ÷ 4.5A
	Input frequency	47Hz ÷ 63Hz
Output specification	Output voltage	24V
	Output current (Min. - Max.)	0A ÷ 4,5A
	Efficiency (Min.)	80%
Environmental condition	Operating temperature	0°C ÷ 70°C
	Humidity	20% ÷ 85% Rh (w/o condensation)
	Storage temperature / Humidity	-10°C ÷ 75°C/ 10% ÷ 95% (w/o condensation)

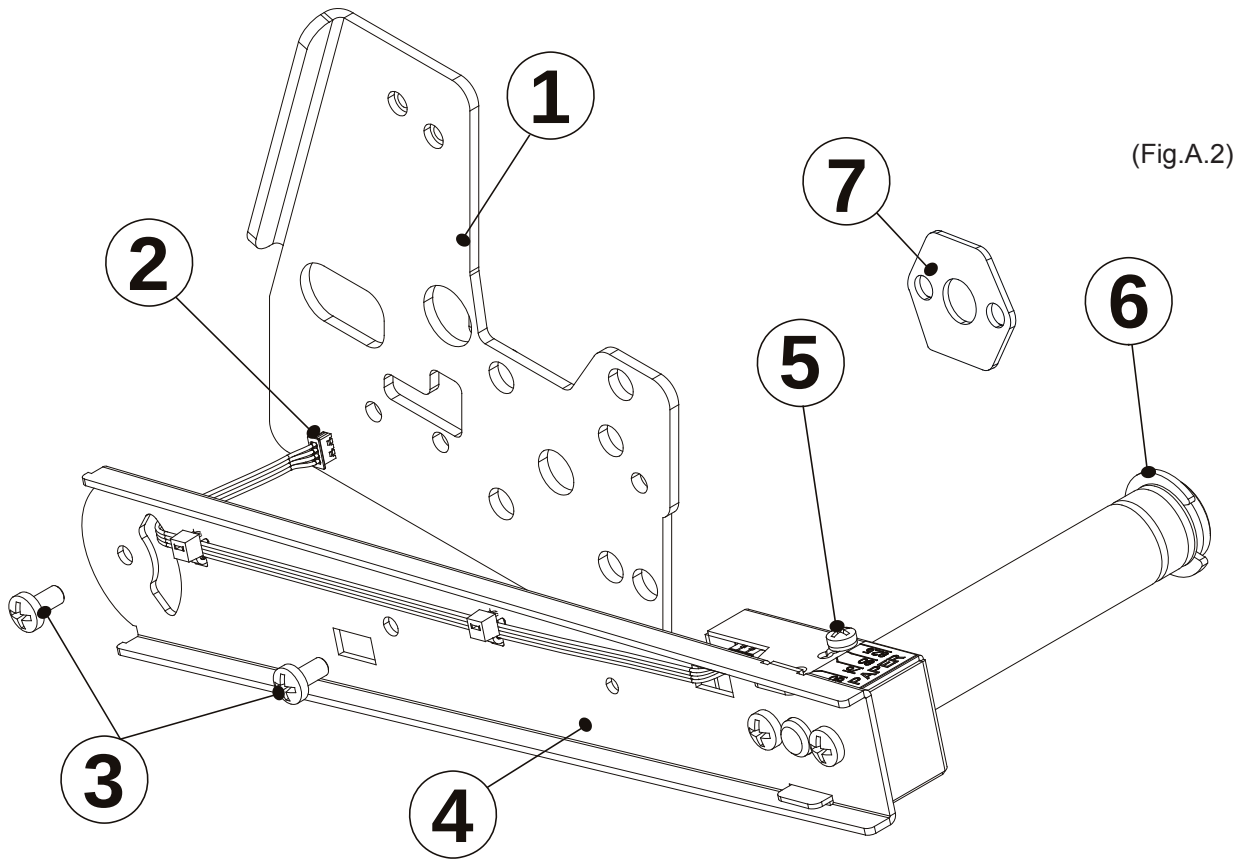
Protection devices: Shortcircuit, overload and overvoltage.

A.1.2 Adjustable paper holder support

An adjustable paper holder support kit (see fig.A.2) is available for the printer to make it possible to use larger-width rolls of paper (130mm max.).

PCXSP-VKP80	Paper roll holder kit with sensor

The kit includes (see fig.A.2) :
1. Side shim
2. Near paper end sensor
3. N°2 M4x8 fastening screws
4. Paper holder support assembled with paper roll pin
5. N°1 M3x6 screw for paper width adjustment
6. Stop ring for paper width adjustment
7. Shim for 82.5mm width paper (1)



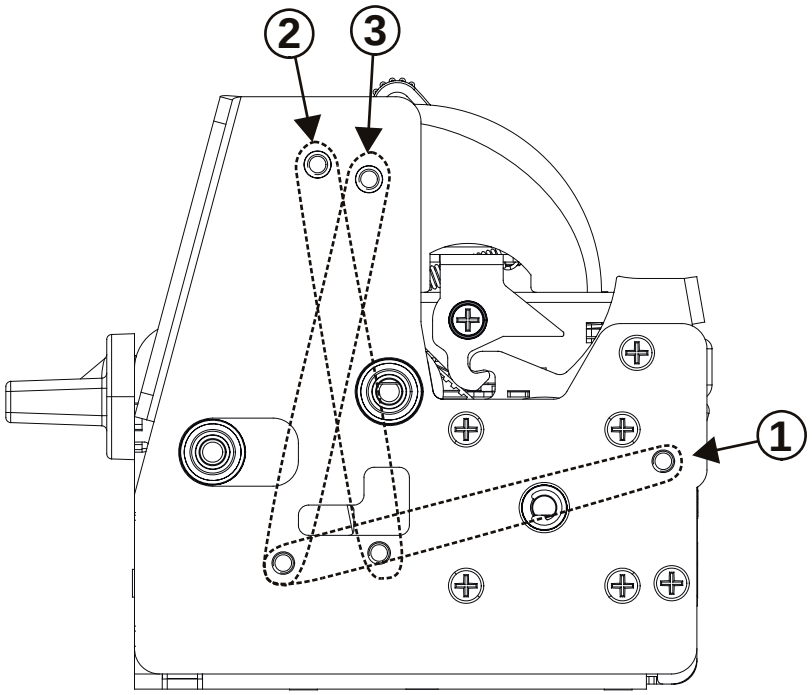
(Fig.A.2)

N.B.:
(1) The shim must only be mounted for 82.5mm width paper. It must not be mounted when using any other paper width.

Assembly instructions

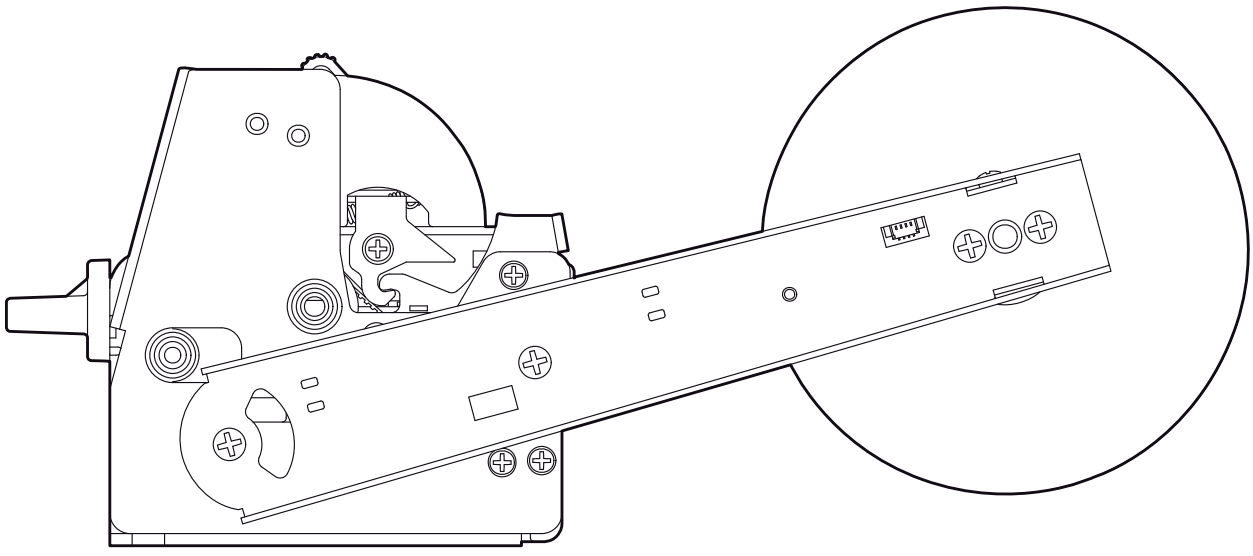
The position of the roll holder support is not fixed and its rear, lower and upper position may be adjusted. The support is attached to the printer frame at two points, as shown in figure A.3.

1. Rear attachment
2. Lower attachment
3. Upper attachment



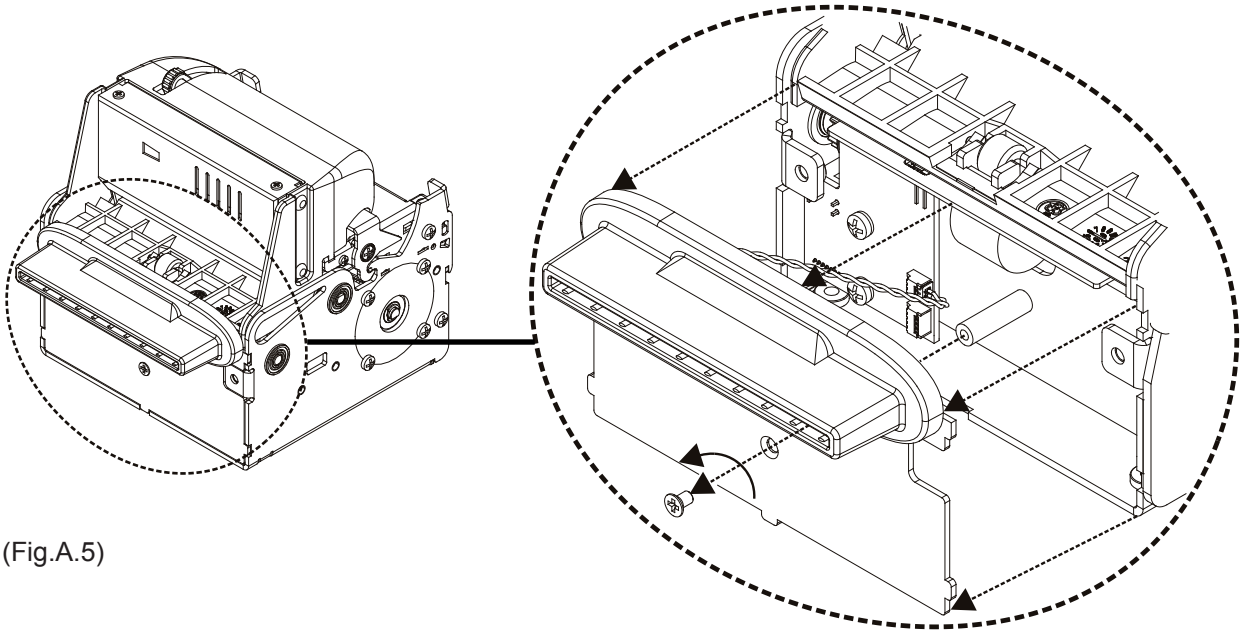
(Fig.A.3)

Rear attachment



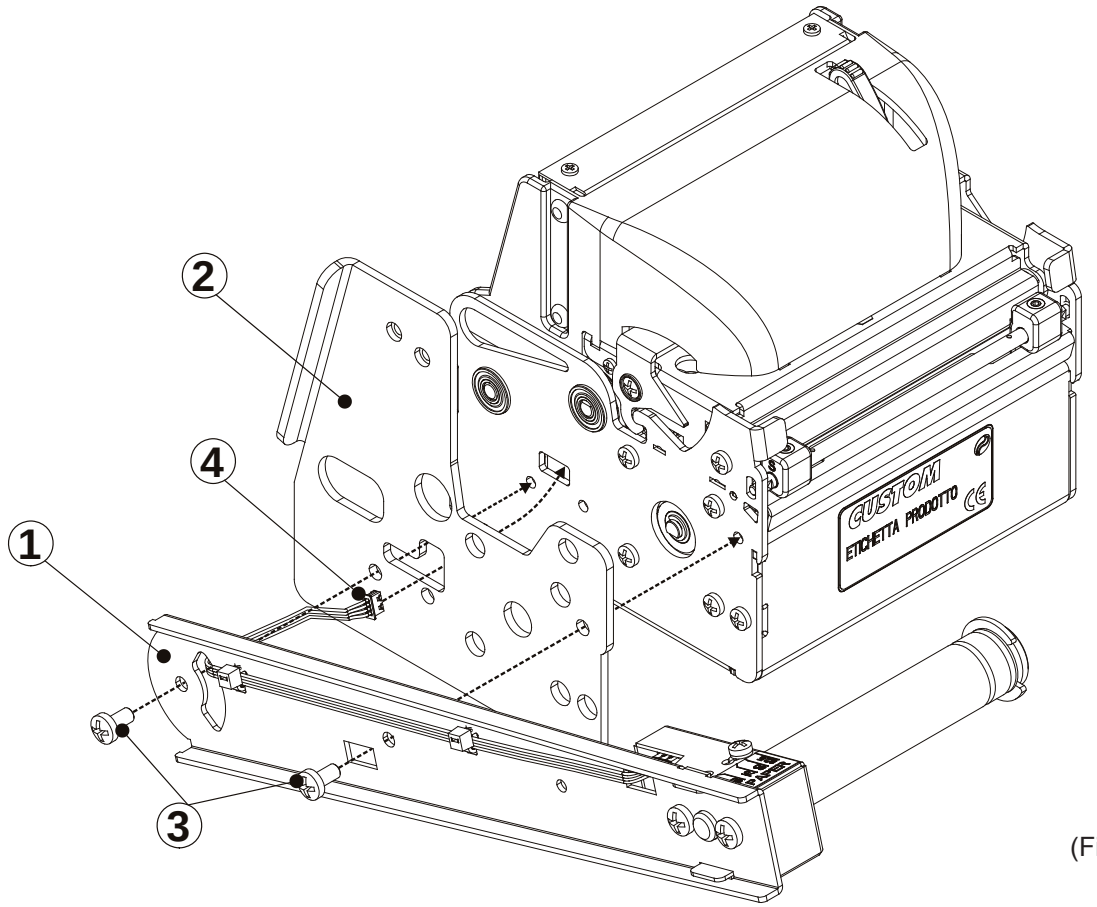
(Fig.A.4)

1. Remove the paper outfeed opening by unscrewing the screw as shown in fig.A.5. This operation is necessary in order to later connect the paper near end sensor connector of the roll holder support to the printer sensor card (see fig.A.7).



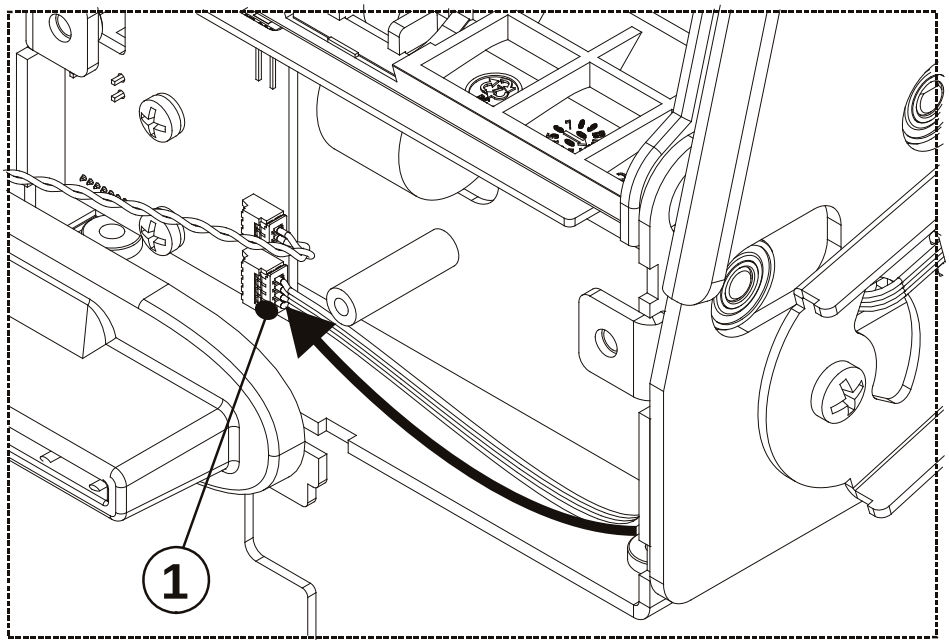
(Fig.A.5)

2. Have the paper near end sensor connector (4) pass through the slits on the side (2) and the printer body. Attach the support (1) and side shim (2) to the printer body using the two M4x8 screws (3) supplied with the kit, as shown in fig.A.6.



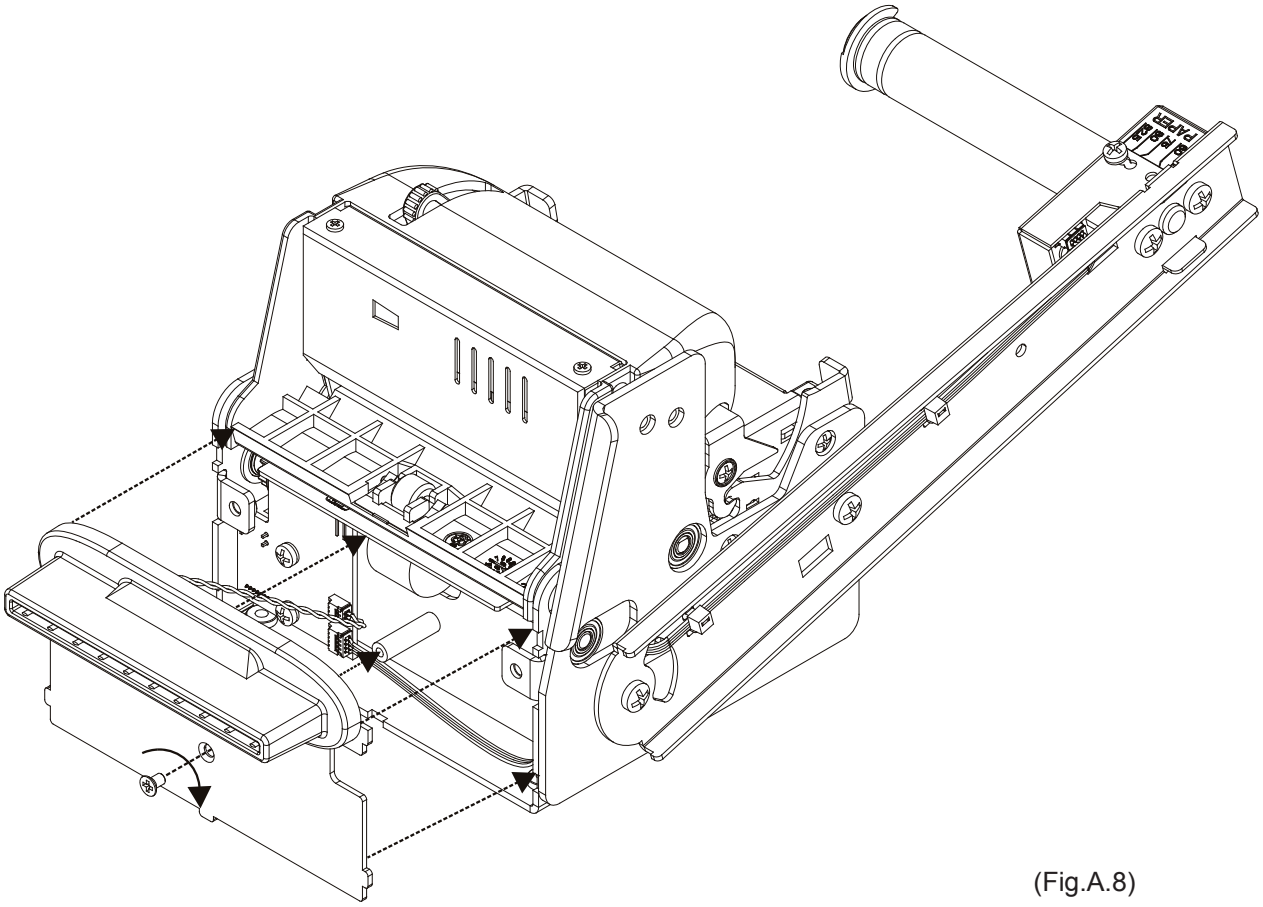
(Fig.A.6)

3. Insert the near paper end sensor connector (1) of the paper holder support into the connector of the sensor card located on the printer as shown in fig.A.7.



(Fig.A.7)

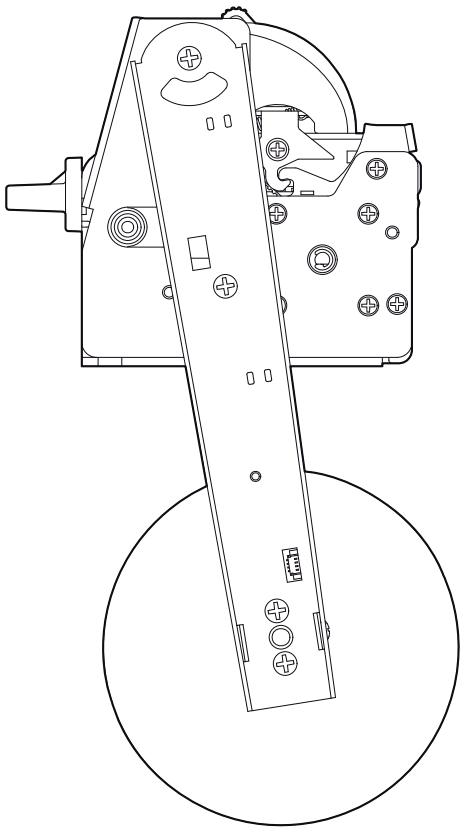
4. Re-assemble the paper outfeed opening as shown in fig.A.8 and screw in place.



(Fig.A.8)

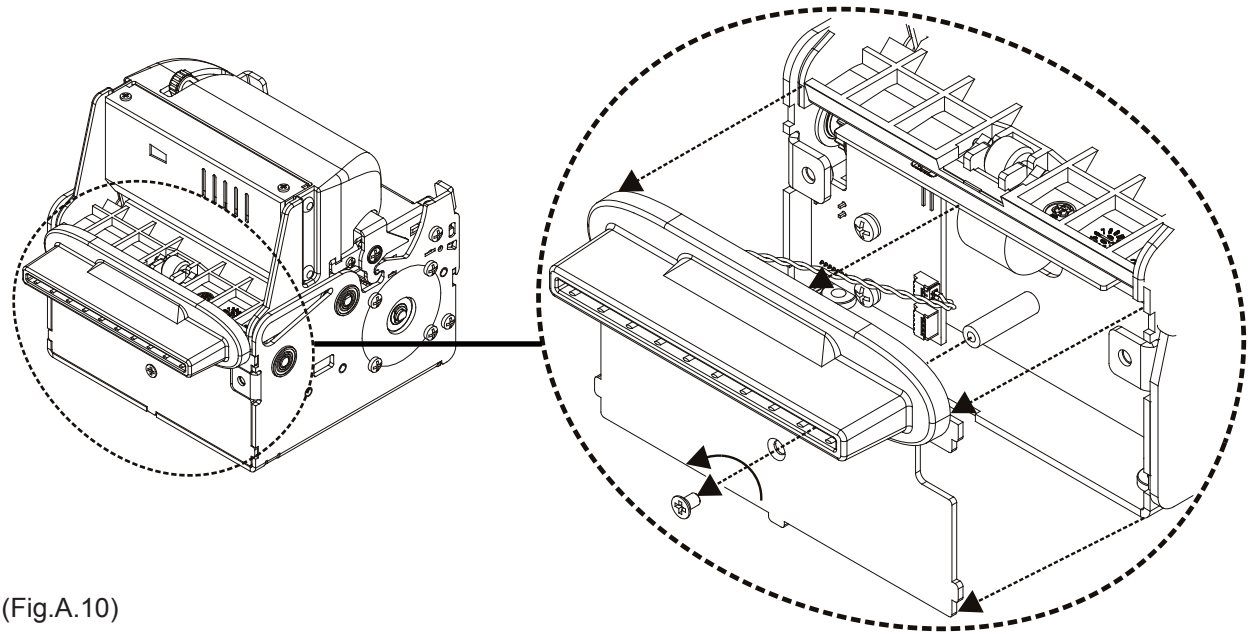
Lower attachment

N.B.:
In this configuration the retracting function must be disabled because the position of paper roll prevents the correct working of the printer.



(Fig.A.9)

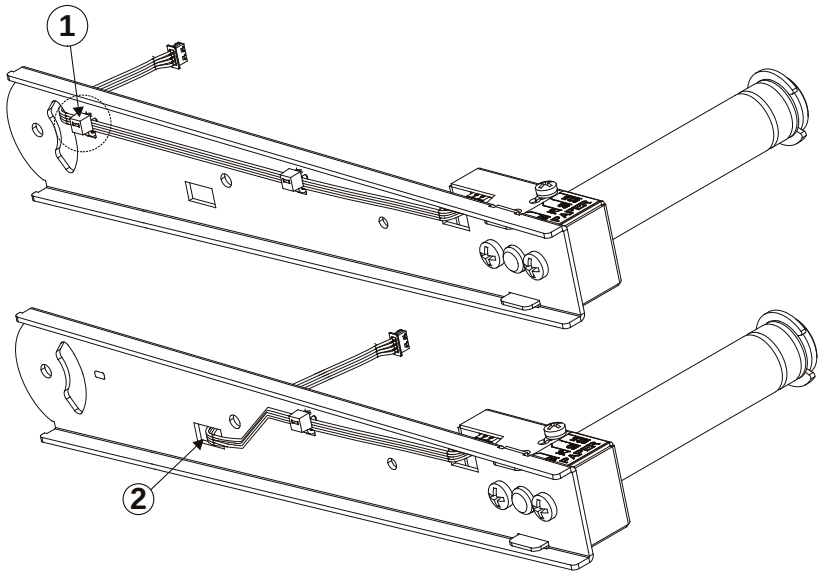
1. Remove the paper outfeed opening by unscrewing the screw as shown in fig. A.10. This operation is necessary in order to later connect the paper near end sensor connector of the roll holder support to the printer sensor card (see fig. A.14).



(Fig.A.10)

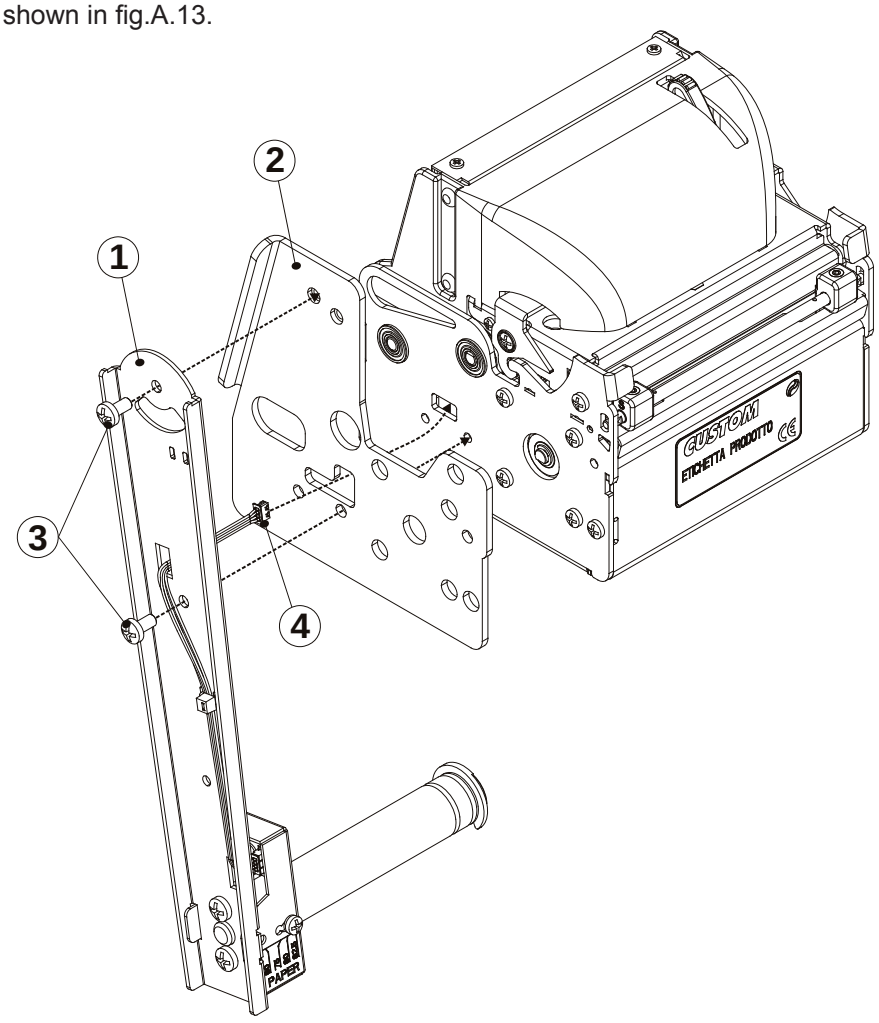
2. To shorten the path of the paper near end sensor wiring, cut the band (1) from the roll holder support as shown in fig.A.11, taking care not to damage the wires themselves. Pass the connector of the near paper end sensor through the rectangular slit (2) on the support as shown in fig.A.12.

(Fig.A.11)



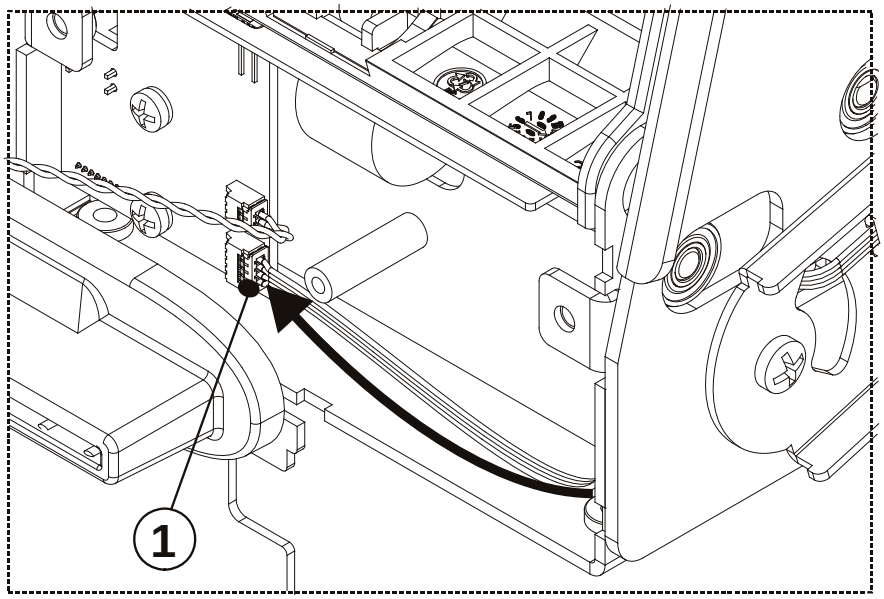
(Fig.A.12)

3. Have the paper near end sensor connector (4) pass through the slits on the side (2) and the printer body. Attach the support (1) and side shim (2) to the printer body using the two M4x8 screws (3) supplied with the kit, as shown in fig.A.13.



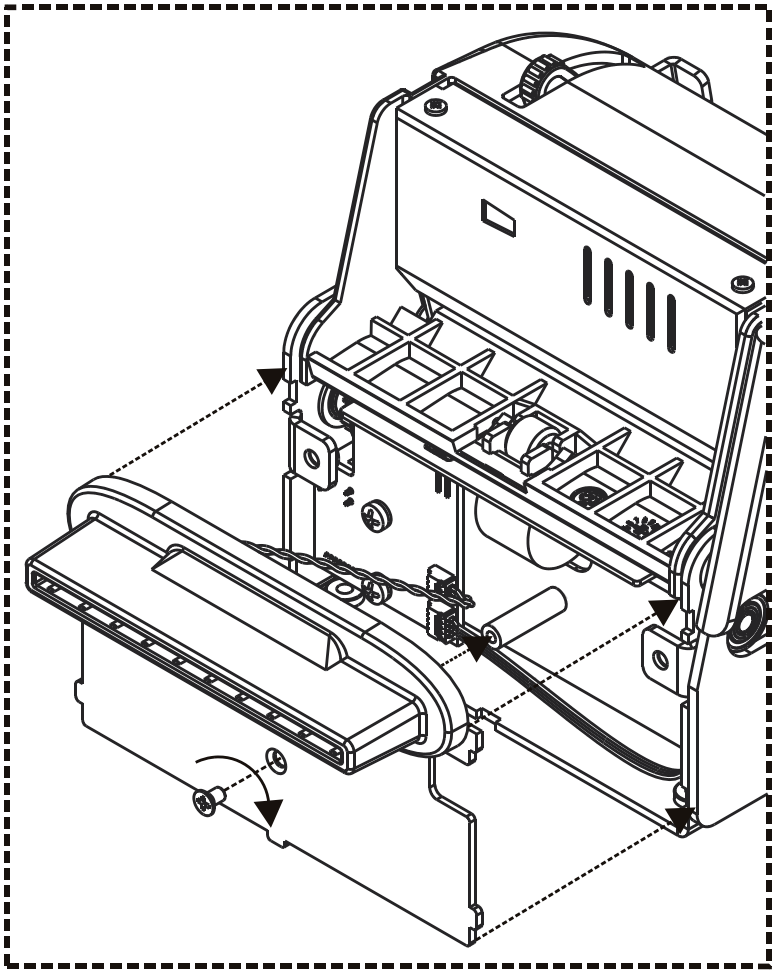
(Fig.A.13)

4. Insert the paper near end sensor connector (1) of the roll holder support into the connector of the sensor card located on the printer as shown in fig.A.14.



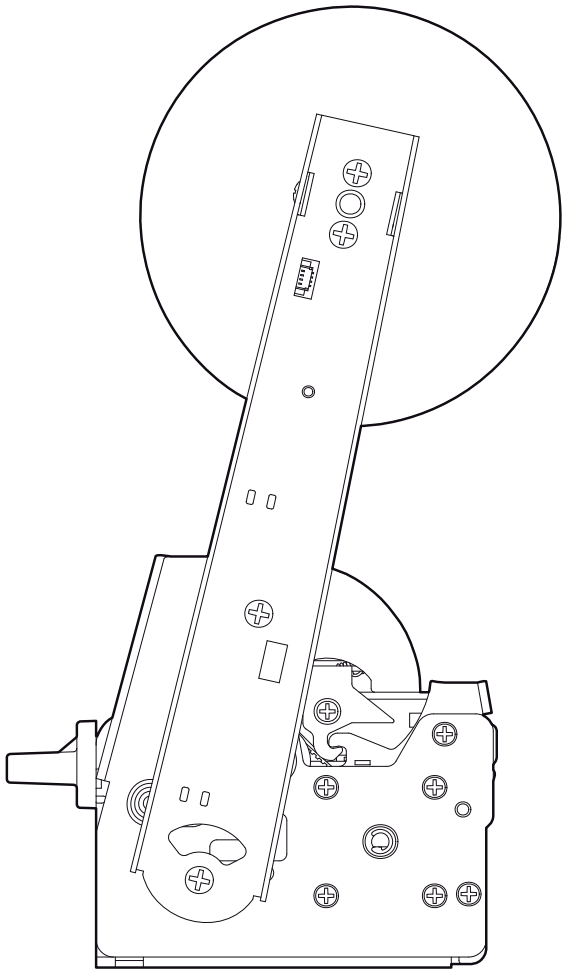
(Fig.A.14)

5. Re-assemble the paper outfeed opening as shown in fig.A.15 and screw in place.



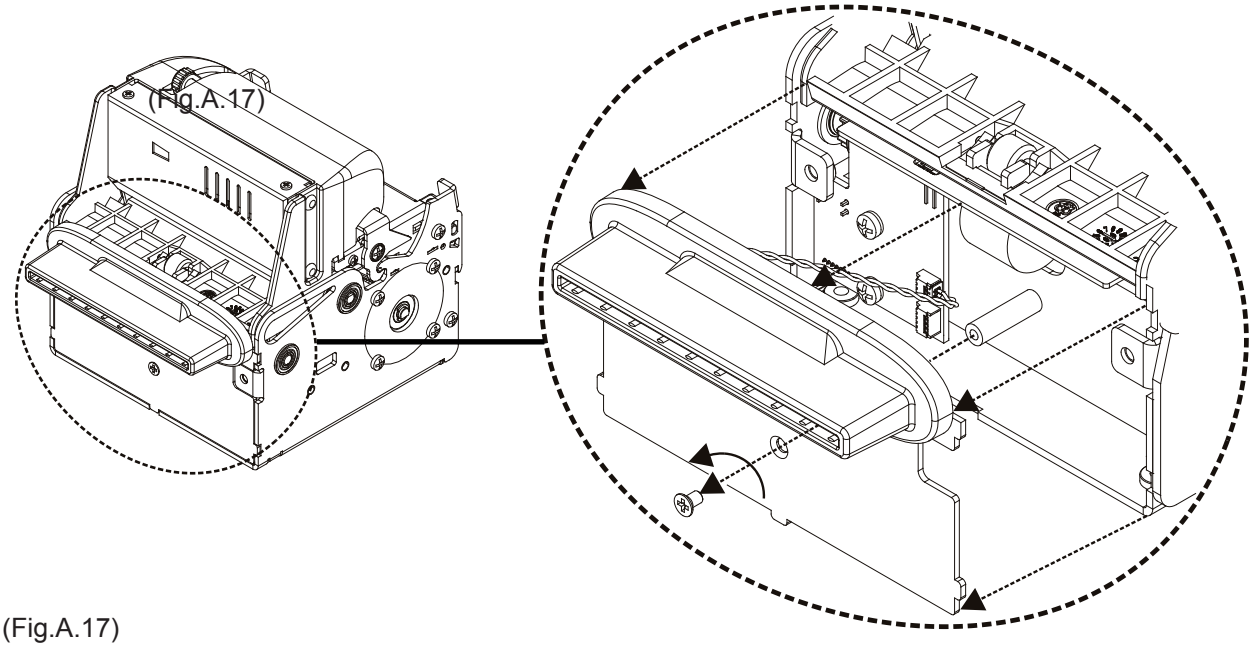
(Fig.A.15)

Upper attachment



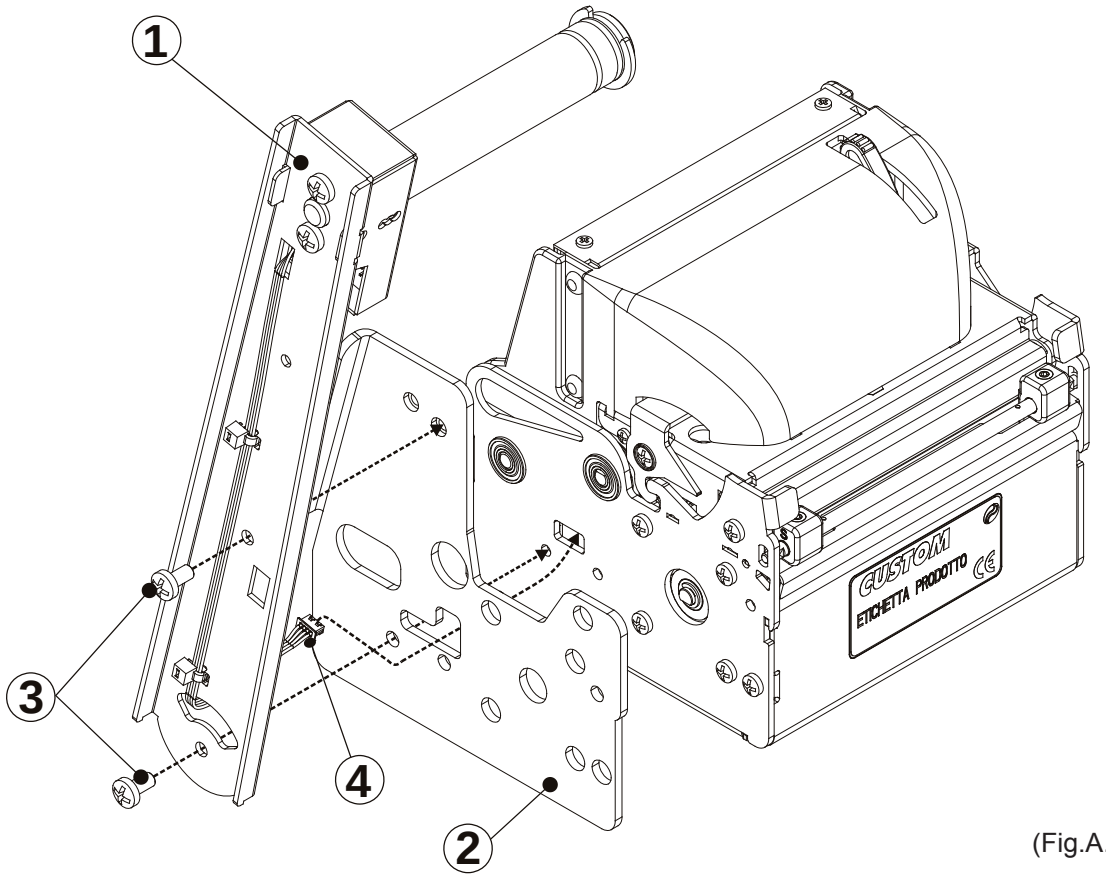
(Fig.A.16)

1. Remove the paper outfeed opening by unscrewing the screw as shown in fig.A.17. This operation is necessary in order to later connect the paper near end sensor connector of the roll holder support to the printer sensor card (see fig.A.19).



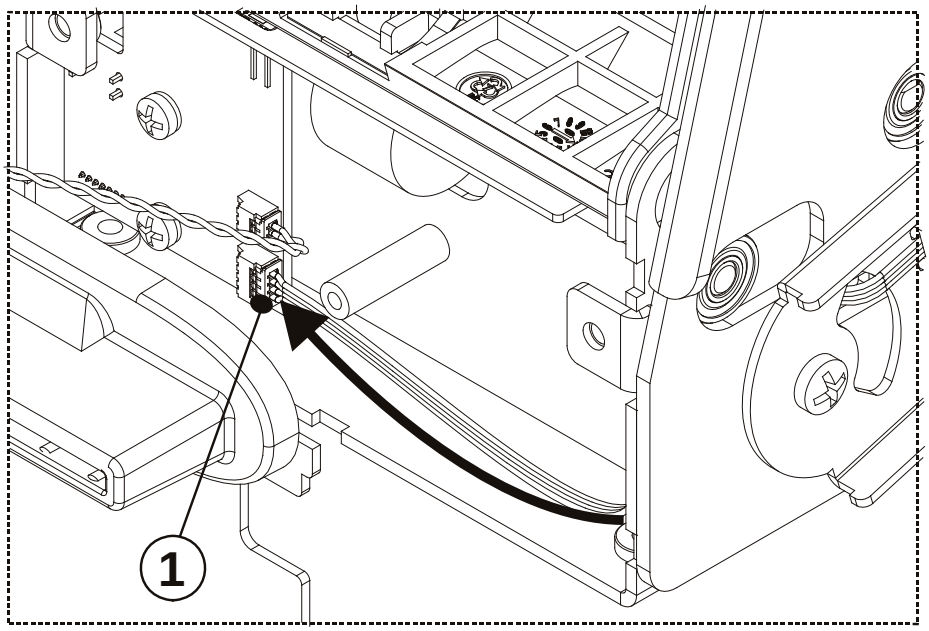
(Fig.A.17)

2. Have the near paper end sensor connector (4) pass through the slits on the side (2) and the printer body. Attach the support (1) and side shim (2) to the printer body using the two M4x8 screws (3) supplied with the kit, as shown in fig.A.18.



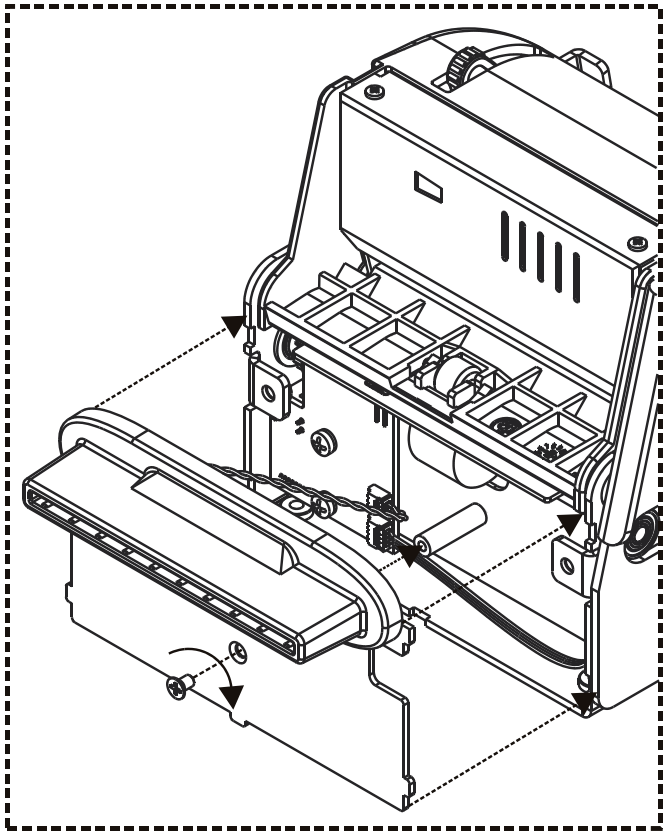
(Fig.A.18)

3. Insert the near paper end sensor connector (1) of the paper holder support into the connector of the sensor card located on the printer as shown in fig.A.19.



(Fig.A.19)

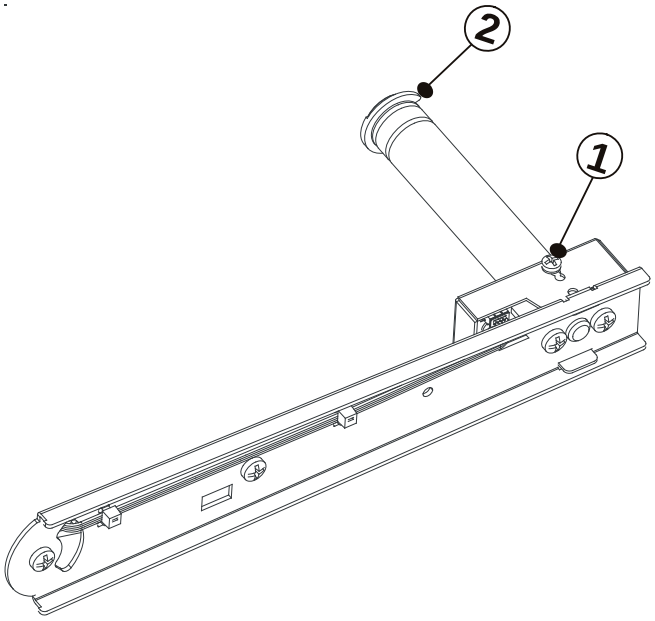
4. Re-assemble the paper outfeed opening as shown in fig.A.20 and screw in place.



(Fig.A.20)

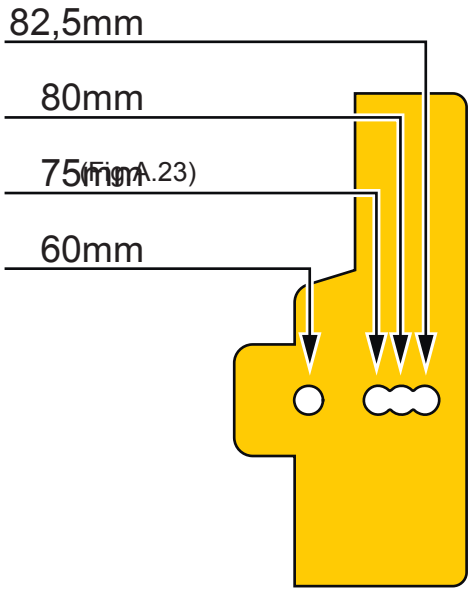
Paper width adjustment with roll holder support

Paper width may be set at four different positions (60mm, 75mm, 80mm and 82.5mm) using the M3x6 screw (1) located on the photocell protection housing and using the stop ring (2) located on the paper roll pin of the support (see fig.A.21).



(Fig.A.21)

Fig.A.22 shows a view from above of the photocell protection housing indicating the positions of the M3x6 screw (1)to adjust paper width.



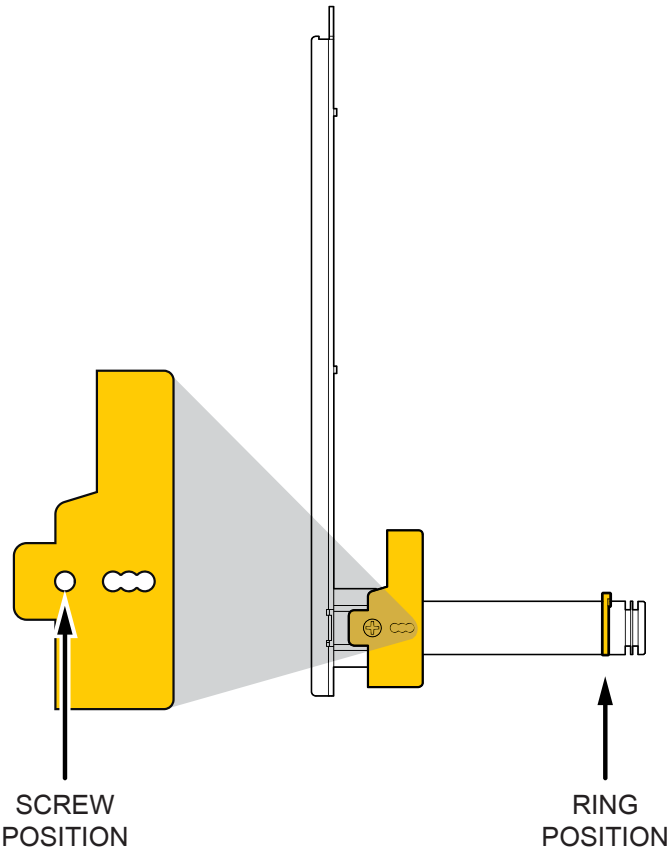
(Fig.A.22)

To adjust paper width, proceed as follows using figs. A.23, A.24, A.25 and A.26 as reference:

1. Move the screw above the photocell protection housing to the holes corresponding to the paper width desired (see fig.A.22).
2. Move the stop ring located on the roll holder pin to the position corresponding to the paper width desired.

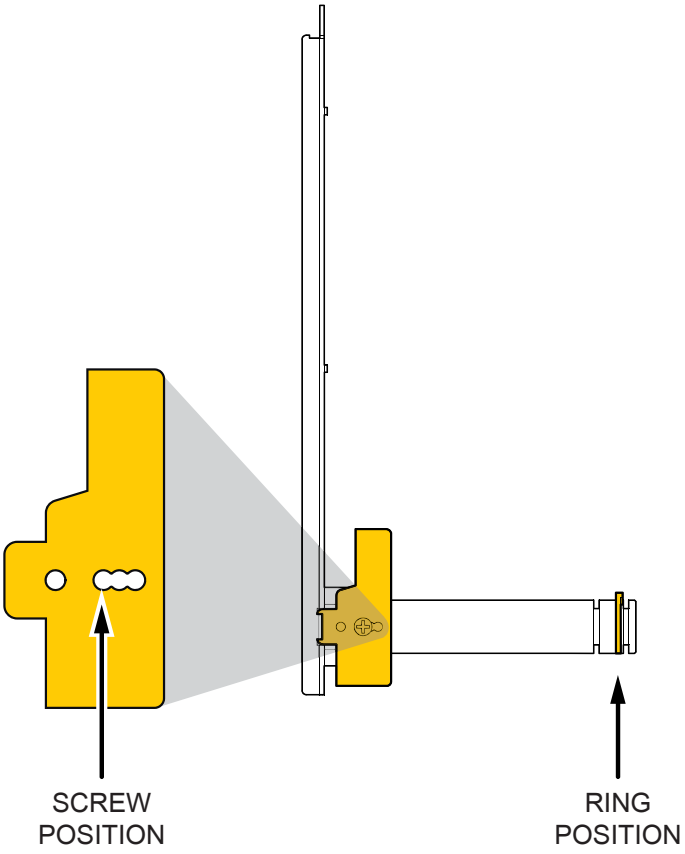
60mm paper width:

(Fig.A.23)



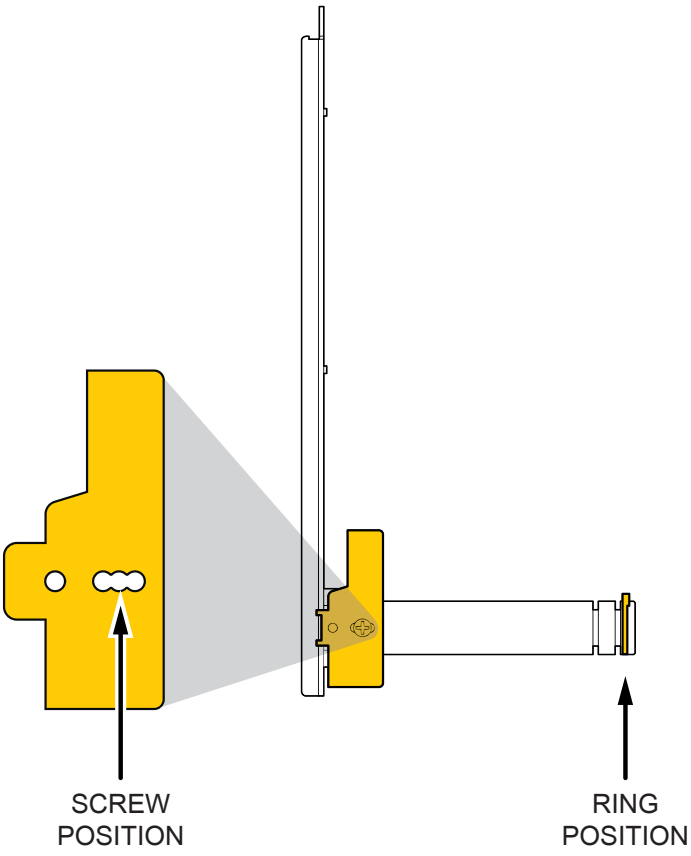
75mm paper width:

(Fig.A.24)



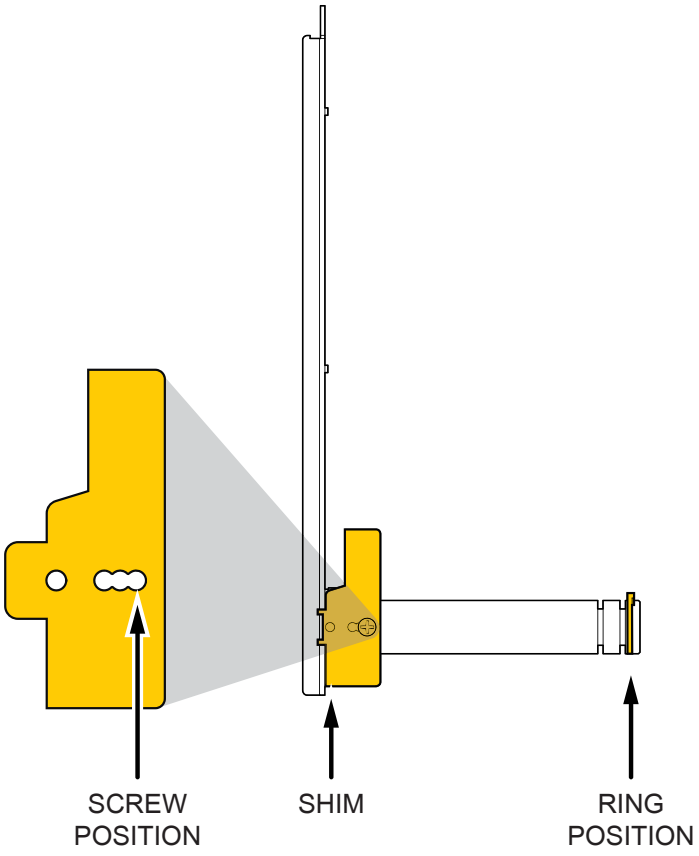
80mm paper width:

(Fig.A.25)

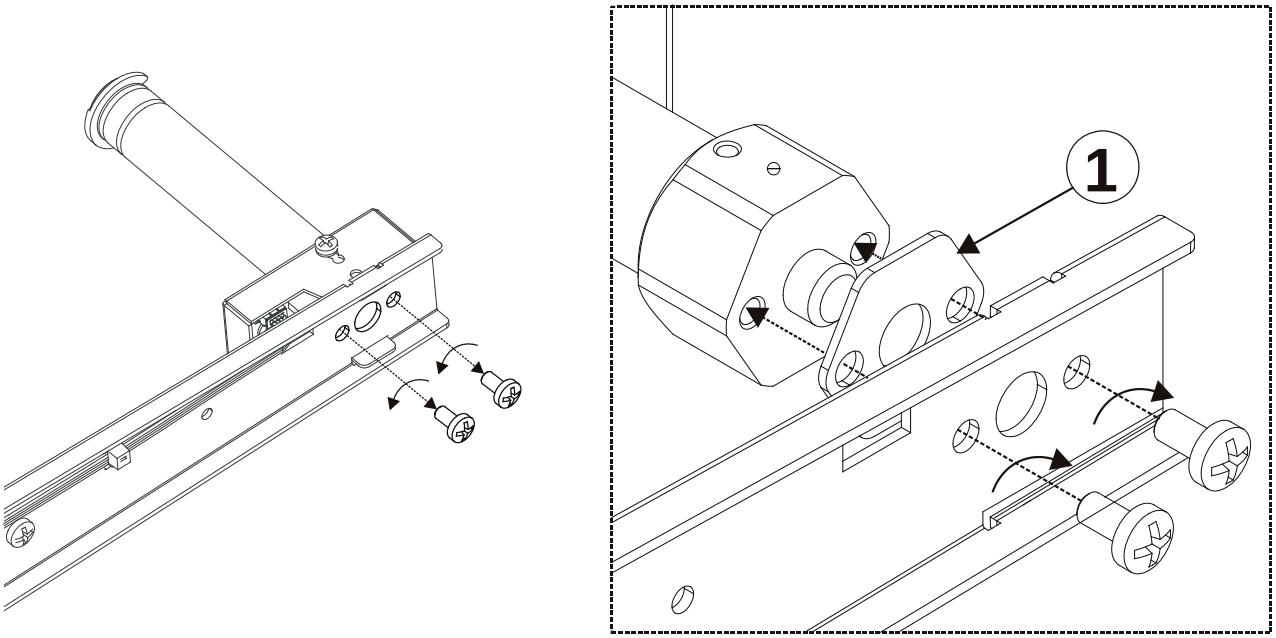


82.5mm paper width:

(Fig.A.26)



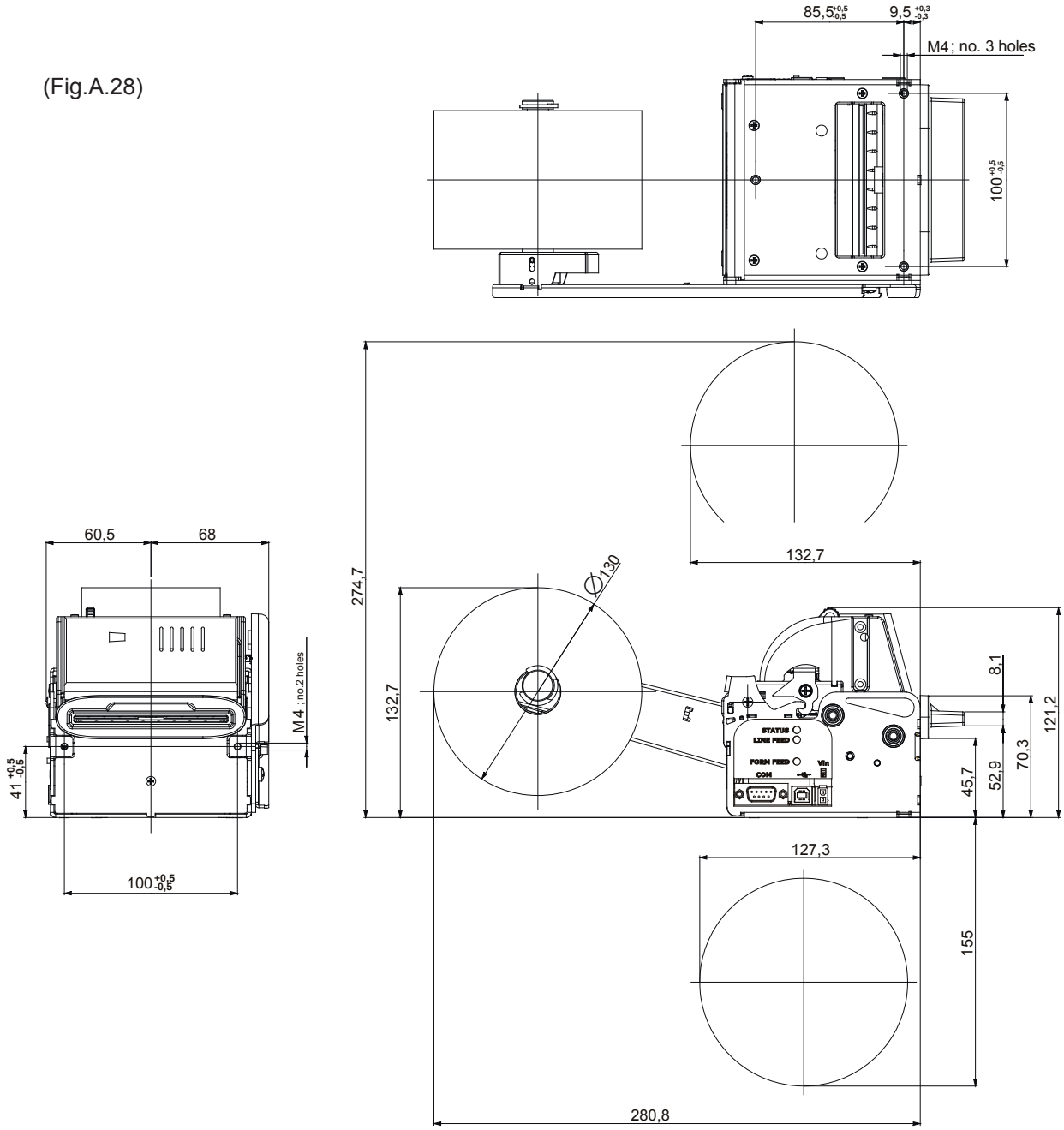
N.B.:
For 82.5mm paper width only, assemble the shim supplied with the kit between the pin and support as shown in fig.A.27, unscrewing the two M4x8 screws from the support at the paper roll pin.



(Fig.A.27)

Printer dimensions with roll holder support

(Fig.A.28)



A.2 SUPPLIES

RCT80X48-25MM-RS	80mm thermal paper roll back side pre-printed

Paper roll with paper holder support

RCT80X130-25MM	Thermal paper roll 80mm

A.3 NOTES FOR TECHNICAL ASSISTANCE

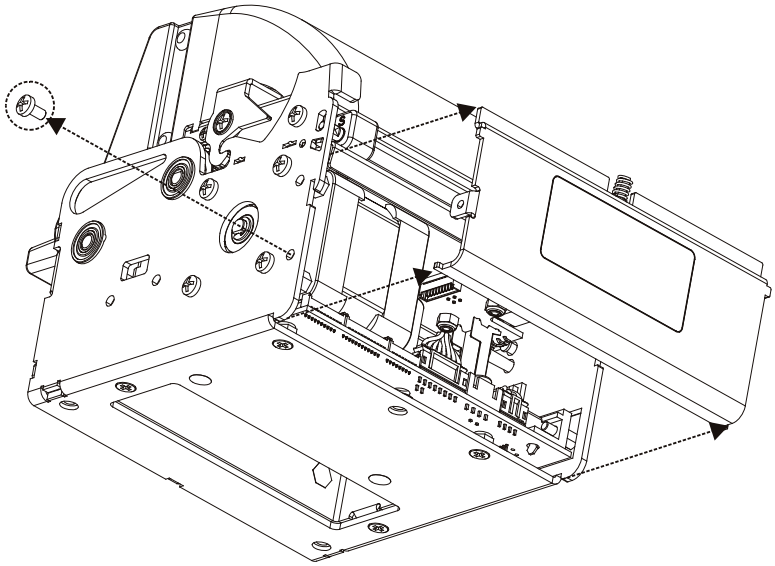
ATTENTION: The operations here described are exclusively aimed to the personnel handling the technical assistance of the printer.

A.3.1 Replacing fuse

ATTENTION: Before replacing the fuse, it's important to check up that the supply cable of the printer is out.

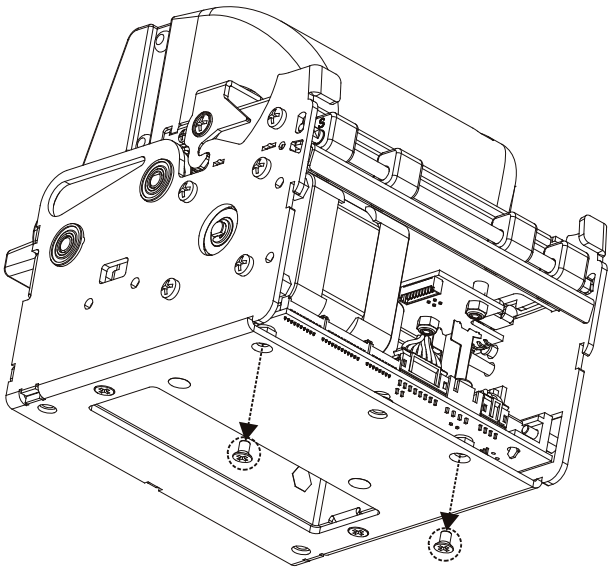
The fuse is on the control board of the printer, near the supply connector (fig.A.33), proceed as follows:

- Remove the back closing from the printer rear by unscrewing the screw as shown in fig.A.29.



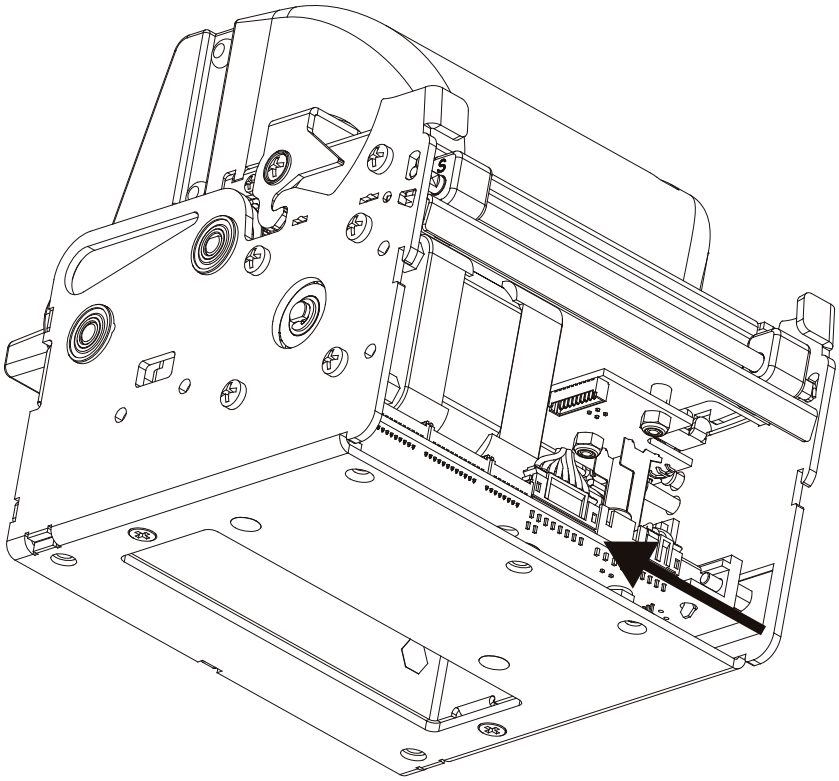
(Fig.A.29)

- Unscrew the two screws that fixing control board to the chassis as shown in fig.A.30.



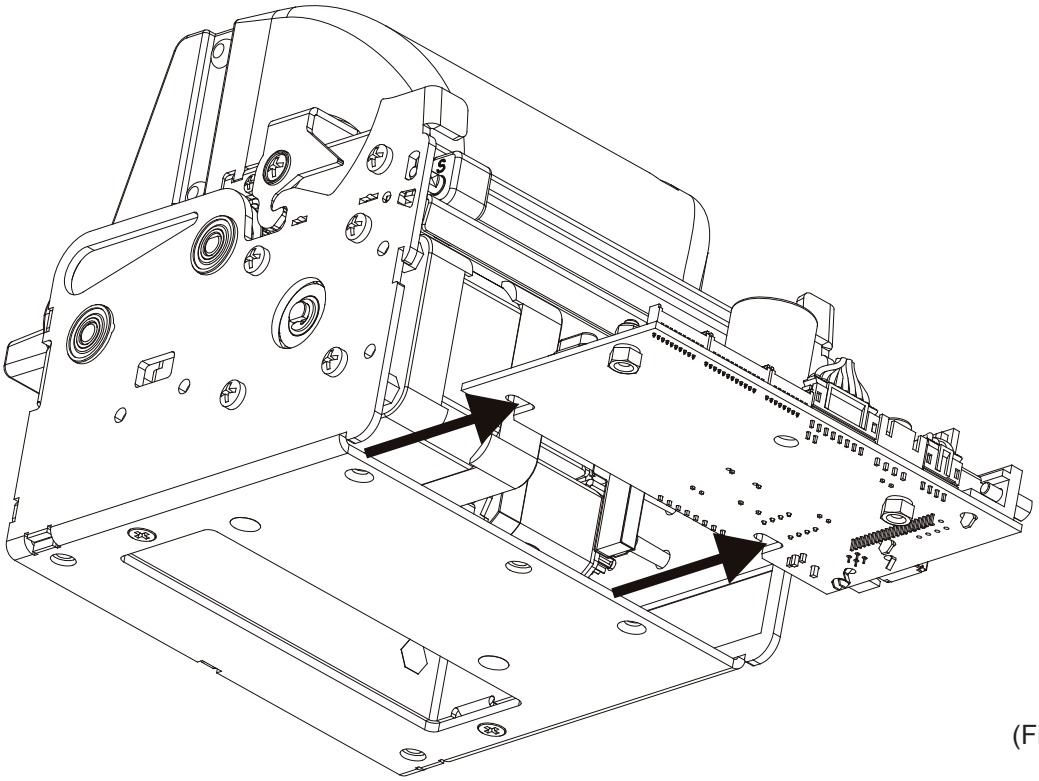
(Fig.A.30)

- Unlock the control board position pushing in the direction indicated by the arrow as shown in fig.A.31.



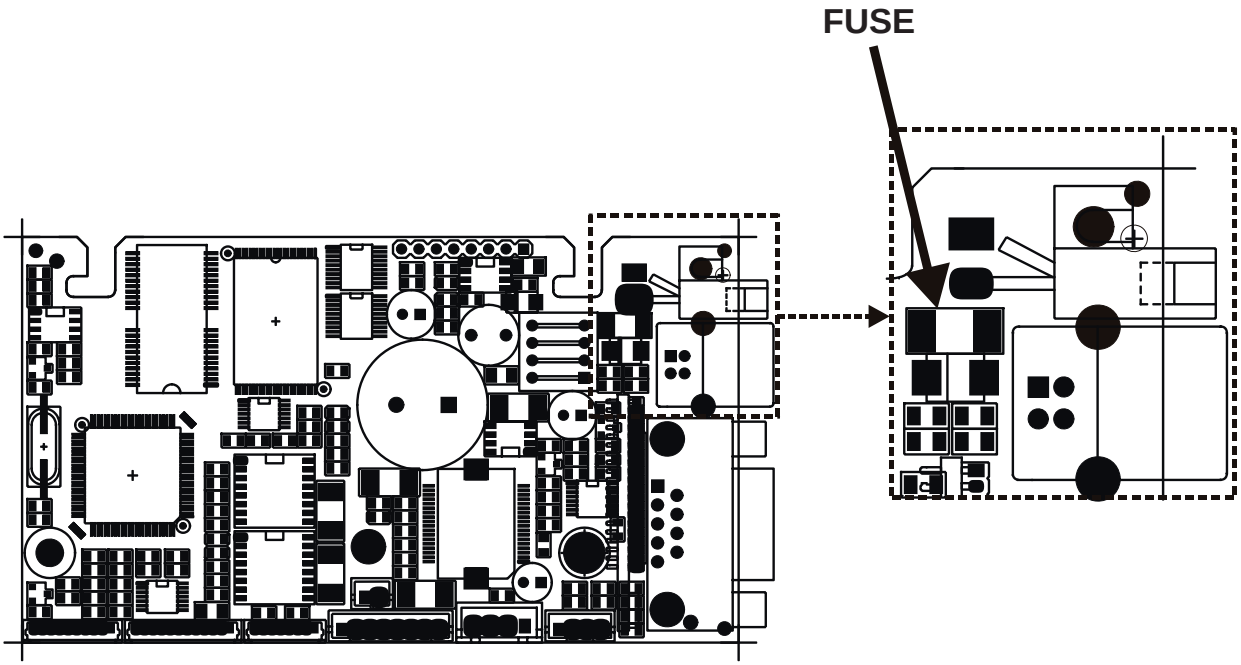
(Fig.A.31)

- Extract the control board from its seating in the direction indicated by the arrow as shown in fig.A.32.



(Fig.A.32)

- The fuse is on the control board of the printer, near the supply connector (fig A.33). Unsolder the fuse at his end, paying attention to not heat excessively the closed components, to not take any risk to damage it.
- Replace the fuse with a new one with same specifications (4A, 125V) and place it again in its seating.
- Reassemble the printer.



(Fig.A.33)

B.1 TICKET ALIGNMENT

B.1.1 Ticket alignment

Paper with an alignment notch can be used in order to handle tickets with pre-printed fields and a fixed length.
To guarantee the alignment it is necessary that the *"Notch Alignment"* parameter is enabled from the key setup (see setting configuration parameters), that the alignment sensor is calibrated and that the parameters are set. The calibration of the sensor occurs automatically within the printer setup.

B.1.2 Enabling, calibrating and setting of parameters.

Calibration is required for precise definition of the PWM duty-cycle of the alignment sensor driver so that it can be adapted to the type of paper stock being utilized (e.g., stock with colored background) and so that the black mark will be detected as it passes over the sensor.
The calibration procedure must be performed with alignment sensor not engaged (not positioned over the notch). When complete, a receipt will be printed out as shown in Fig.A.1, indicating the PWM value detected and the signal calibration thresholds.

The notch sensor is a reflection sensor that emits a band of light and detects the quantity of light reflected to it. The presence of the notch is therefore detected by the amount of light that returns to the sensor, taking into account that the light is reflected by the white paper and absorbed by the black.

Calibration of the sensor occurs automatically and consists in adjusting the quantity of light emitted to adapt it to the degree of whiteness of the paper used.

To start self-calibration, the "Notch Alignment" parameter will have to be enabled from the printer setup (see setting configuration parameters):

Notch Alignment : **Enabled**

The printer will perform some paper FEEDS, at the end of which it will print the value settings, for example:

Autosetting Notch : **OK**
Threshold White : **1.9V [39%]**

The "Autosetting Notch" parameter indicates the operating condition of the self-calibration process; OK will appear if it has been successful, but if it has failed the words NOT OK will appear.
In this case the default parameters concerning the "Threshold White" parameter will be set.

The "Threshold White" parameter indicates the power-up level of the sensor emitting side; its value ranges from 0V to 5V with the corresponding value appearing as a percentage (from 0% to 100%).

Another parameter that needs to be set is the threshold:

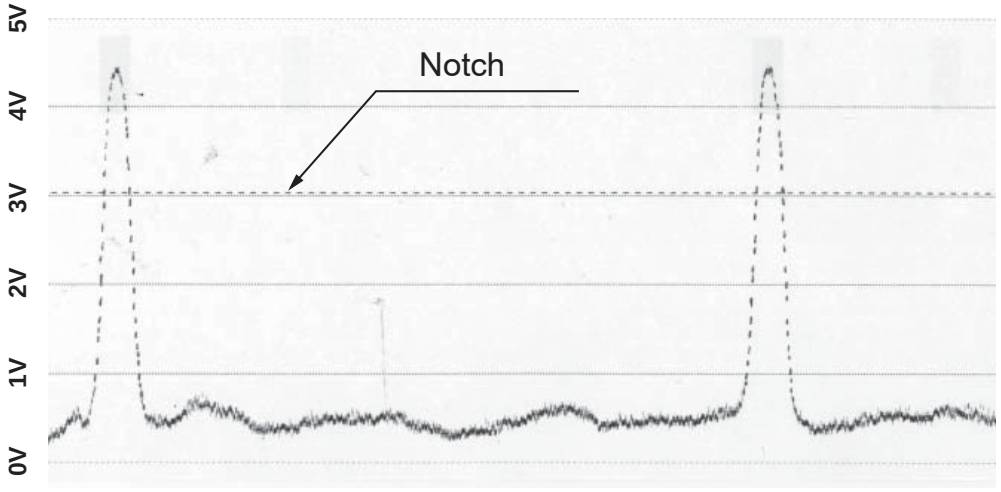
Notch Threshold. : **3.0V**

It is used to detect the presence of the notch: if the voltage value read by the sensor exceeds the threshold value set the notch is identified, otherwise the white paper is considered.
In order to better identify the optimum threshold for the paper being used, a paper characterization function is also available in setup.

Characterize Paper. : **Yes**

By activating this parameter the outgoing voltage of the sensor will be presented in a graphic form as shown in figure B.1 below:

PAPER CHARACTERIZATION



(Fig.B.1)

The graphic shows the references in Volts (from 0 to 5V) and the threshold value previously set. It is clear that by adjusting the threshold value it is possible to find the best position that takes into account the signal peak and the small oscillations around zero.

The ALIGNMENT POINT is defined as the position inside the ticket that is the desired alignment point. The ALIGNMENT POINT can be defined over the notch or near this one; for this reason, the final parameters to be set in setup are:

Notch Dist. [mm x 10] . : 1
Notch Dist. [mm x 1] . : 5

These parameters define the “Notch Distance” that represents the distance from the notch to alignent; in the above example the notch distance is 15 mm.

(Fig.B.2)

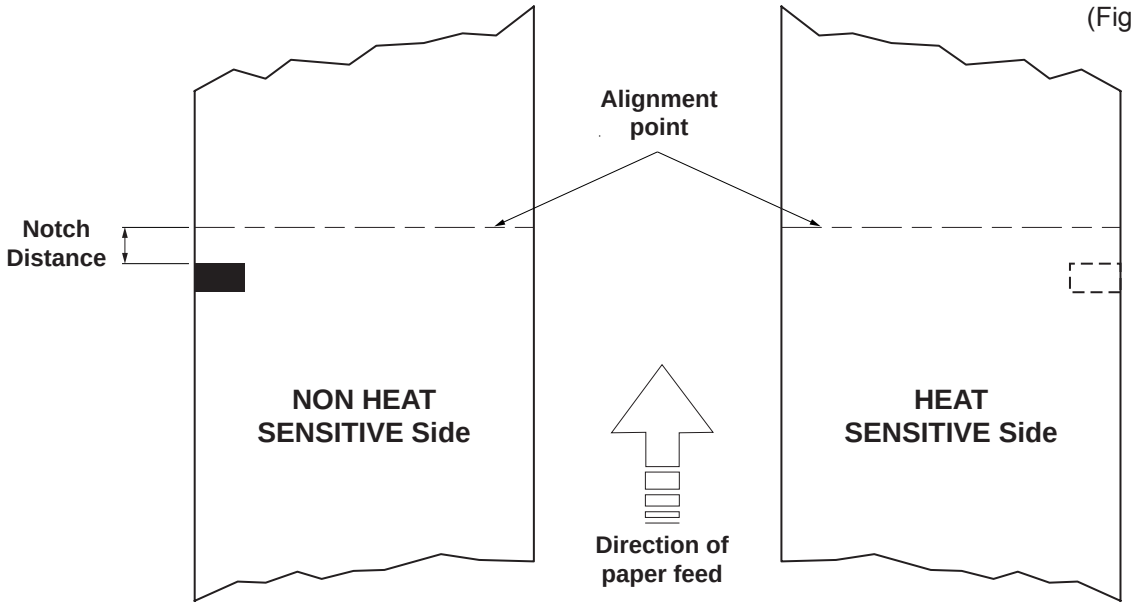


Figure B2 shows how the *“Notch Distance”* parameter represents the distance that exists between the notch and the desired alignment point. This parameter can have a minimum value of 0mm (in this case the alignments occur in proximity of the beginning of the notch) and a maximum of 32 mm. In reality the maximum distance corresponds to the mechanical distance between the notch sensor and the head, and it is for this reason that higher values are not permitted, and negative values are not envisaged.

B.2 COMMANDS

B.2.1 Ticket Alignment.

Two alignment commands are available: $1D $F6 and $1D $F8.
The command $1D $F6 performs an alignment to the print head: the paper is fed through until the print head is at the first available alignment point.
The command $1D $F8 on the other hand refers to the cutter: the paper is fed through until the cutter is at the set alignment point, so that a subsequent cut will occur precisely at the alignment point.
Further explanations can be found in command documentation.

B.2.2 Setting the alignment distance.

The “Notch Distance” parameter can be changed via the printer setup or by using the command $1D $E7 nH nL. For further information refer to the command itself.

B.2.3 Examples.

N.B.: To a better comprehension, in the following figures, the Notch is indicated on the same side of the printing text.

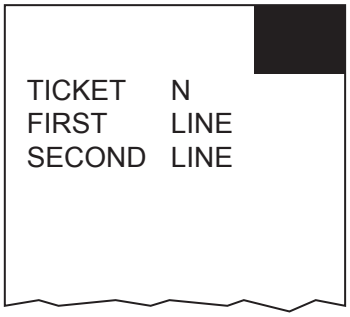
Example 1.

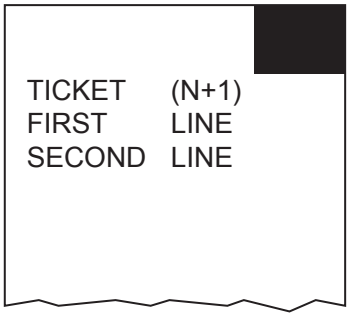
To print a ticket’s sequence witch the cut is made over the notch it’s necessary set the notch distance to zero as follows (this setting have effect after the ticket already in the printer):

{Set Notch Distance}
$1D,$E7,$00,$00,

{Print text}
‘TICKET 1’,$0A,’FIRST LINE’,$0A,’SECOND LINE’,$0A
{Cut alignment}
$1D, $F8,
{Cut}
ESC,’i’,
...

{Print text}
‘TICKET 1’,$0A,’FIRST LINE’,$0A,’SECOND LINE’,$0A
{Cut alignment}
$1D,$F8,
{Cut}
ESC,’i’,
...





(Fig.B.3)

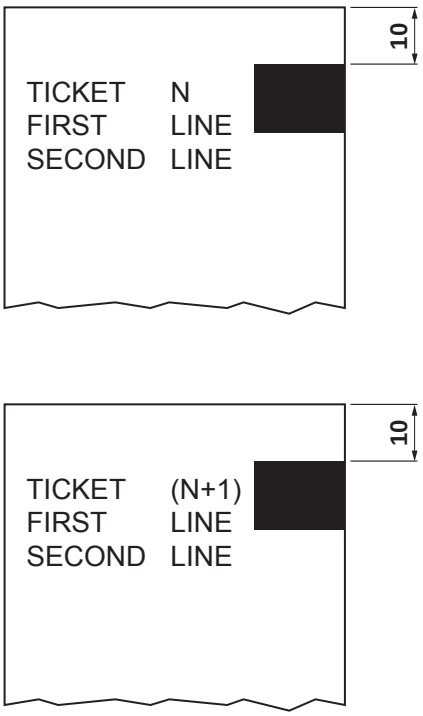
Example 2

To cut 10 mm before the notch the command sequence is (this setting have effect after the ticket already in the printer):

$1D, $E7, $00, $0A,

{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut alignment}
$1D, $F8,
{Cut}
ESC,'i',
...

{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut alignment}
$1D,$F8,
{Cut}
ESC,'i',
...



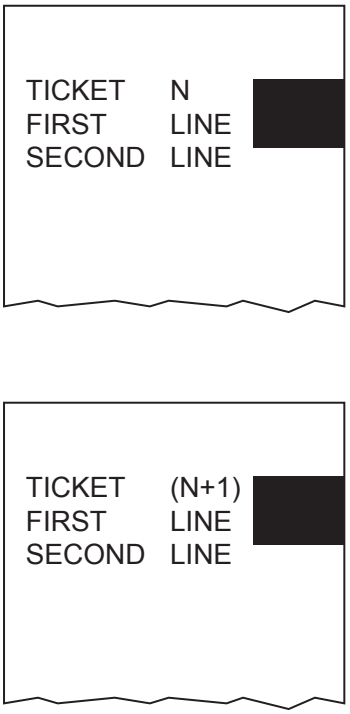
(Fig.B.4)

Example 3.

To print over the notch the command sequence is (this setting have effect after the ticket already in the printer):

{Set Notch Distance}
$1D,$E7,$00,$00,
{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut}
ESC,'i'
...

{Set Notch Distance}
$1D,$E7,$00,$00,
{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut}
ESC,'i',
...



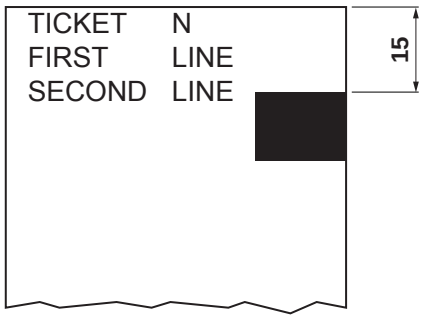
(Fig.B.5)

Example 4.

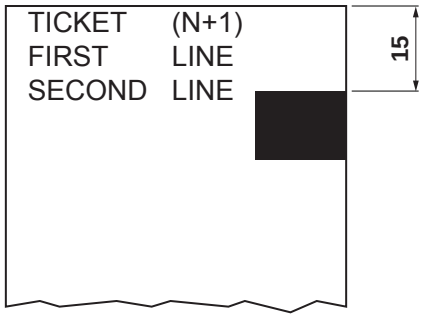
To print 15 mm before the notch the command sequence is (this setting have effect after the ticket already in the printer):

{Set Notch Distance}
$1D,$E7,$00,$00,

{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut alignment}
$1D, $F8,
{Cut}
ESC,'i',
...



{Print text}
'TICKET 1',$0A,'FIRST LINE',$0A,'SECOND LINE',$0A
{Cut alignment}
$1D,$F8,
{Cut}
ESC,'i',



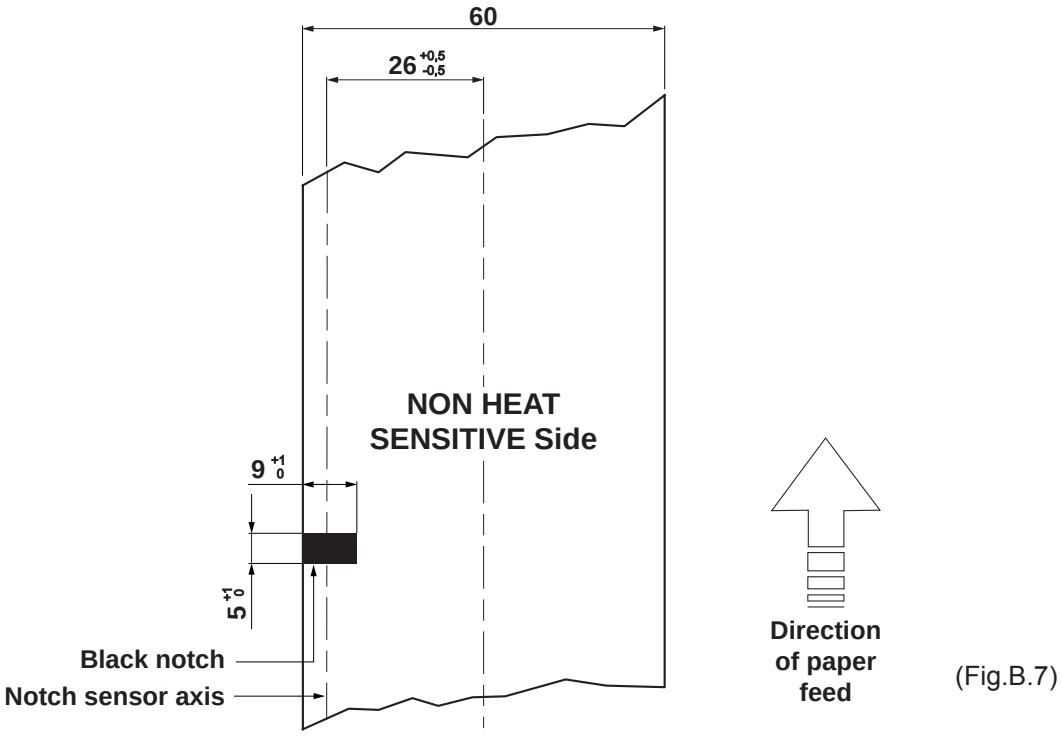
(Fig.B.6)

B.3 CHARACTERISTICS OF THE PAPER.

B.3.1 Dimensions and position of the notch.

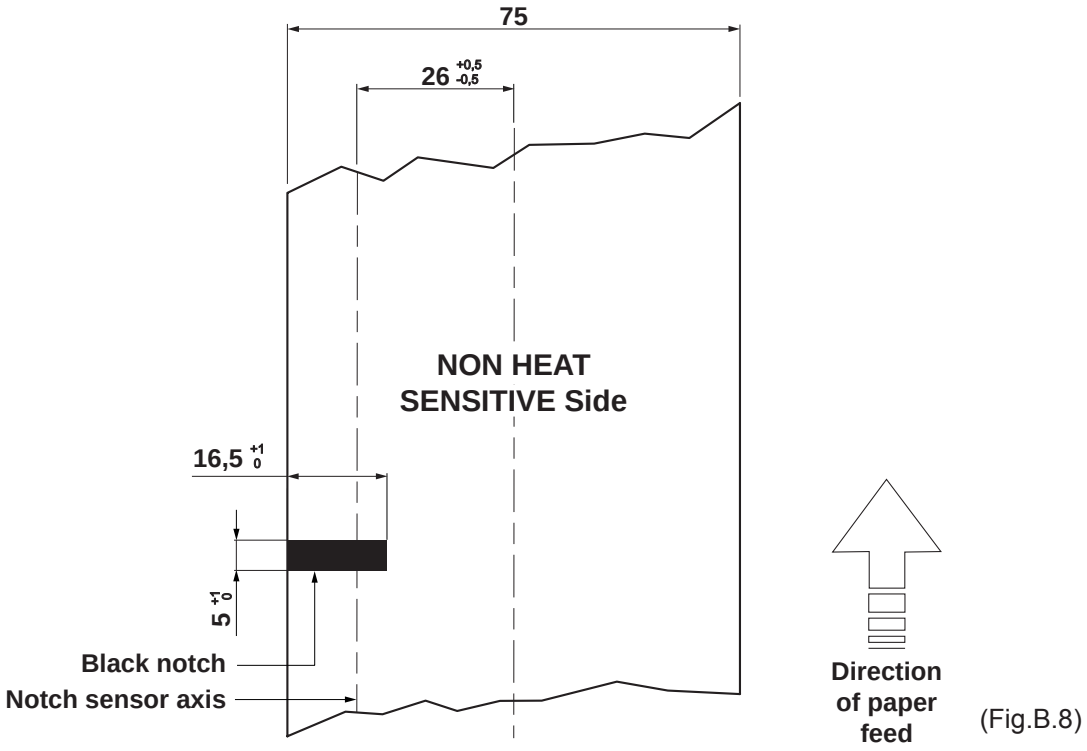
The notch must be positioned on the non-heat sensitive side of the paper as shown in figures B.7, B.8, B.9 and B.10, showing some fac-similes of paper with alignment notch depending on the width of the paper used.

Notch on 60mm paper



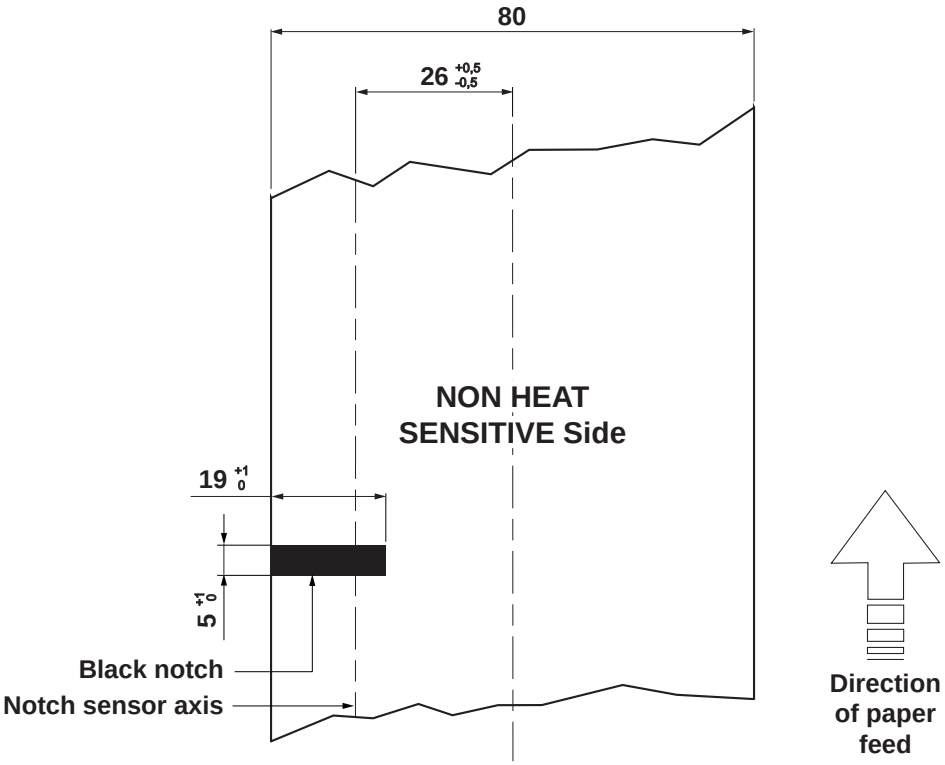
(Fig.B.7)

Notch on 75 mm paper



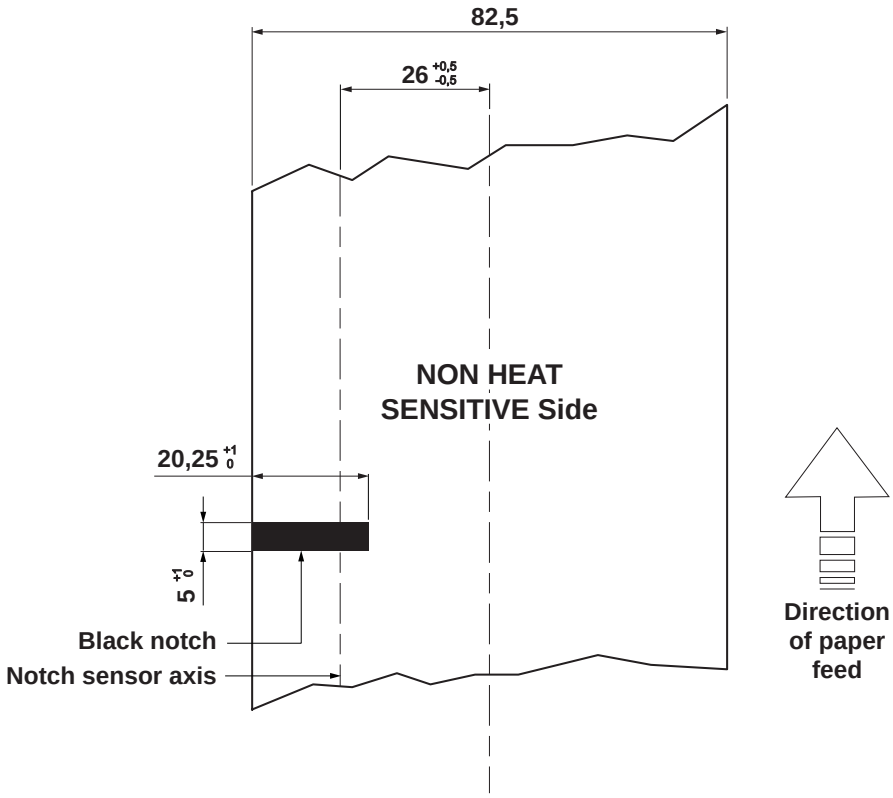
(Fig.B.8)

Notch on 80 mm paper



(Fig.B.9)

Notch on 82,5 mm paper



(Fig.B.10)

B.3.2 Position of sensors

Figure B.11 shows a section of the printer and the distances between the head, the cutter and the notch sensor.

(Fig.B.11)

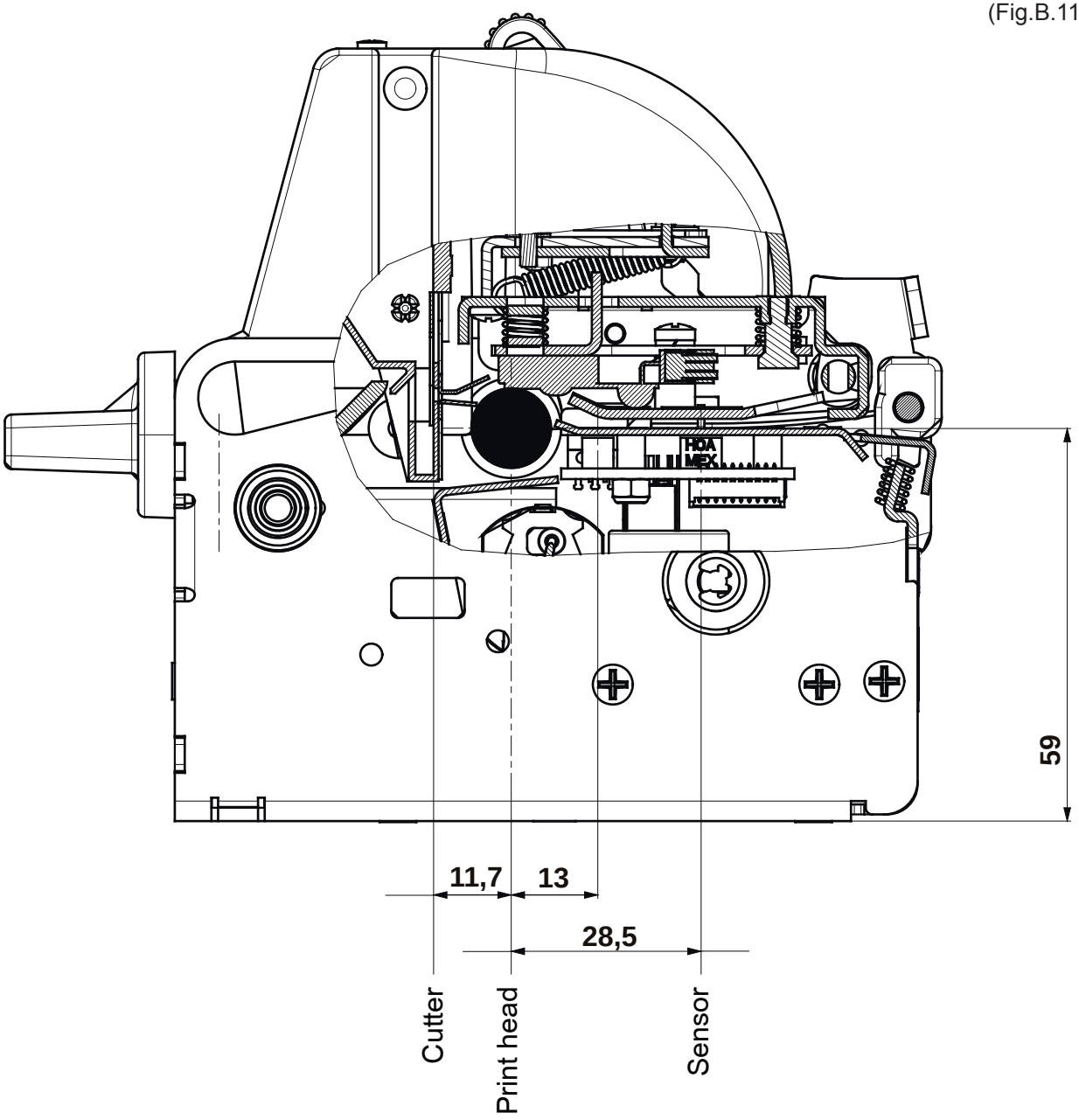


Figure B.7 clearly shows why the alignment distance (Notch Distance) cannot exceed the notch sensor-head distance. The moment that the notch sensor detects a notch, the head is already mechanically positioned 32 mm upstream of the of the notch in order therefore for it to align itself with this notch, as a reference the paper can only be fed forward, and so reduce the distance already there.

B.3.3 Dimension of tickets

It is very important to well calibrate the height of the printer area, according to the distance between the two edges of the notch.
In order not to miss a notch (a ticket must therefore contain only one notch) the following equation must be used:

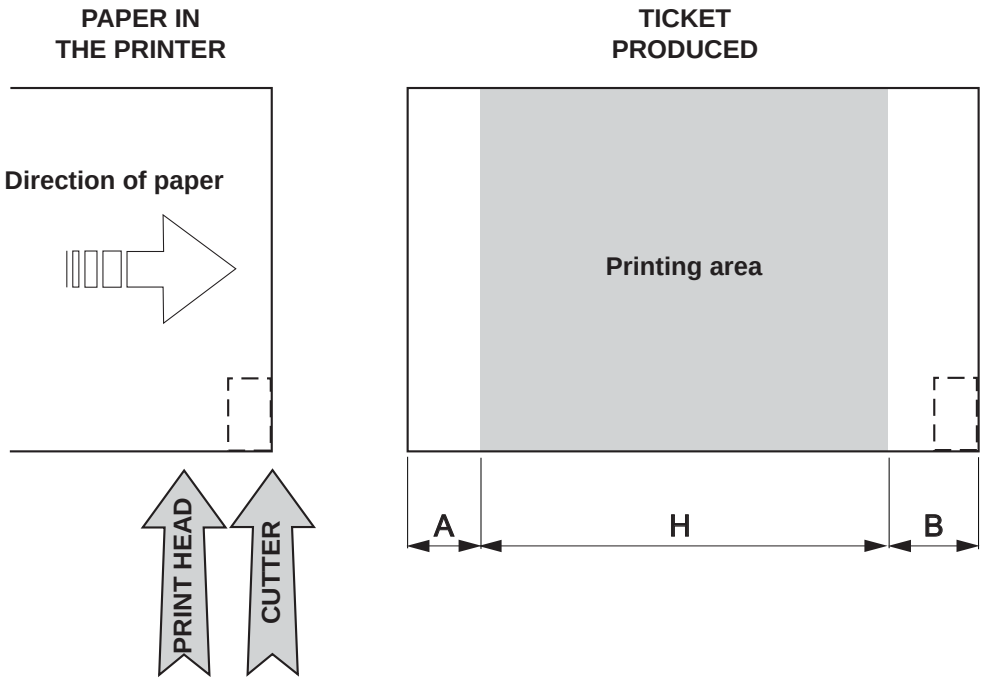
INTER-NOTCH DISTANCE>PRINTED AREA HEIGHT + NON-PRINTABLE AREA

where

INTER-NOTCH DISTANCE = the distance between two notch edges
NON-PRINTABLE AREA = cutter-head distance

The picture in figure B.12 shows a sequence of printed tickets aligning each one at the cut. It can be noted that increasing the printed area will result in superimposing what is to be printed at the subsequent notch. The size of the print area can be enlarged until it renders the alignment feed void, but not beyond. It is very important never to forget about the non-printable area that corresponds to the cutter-head distance and is the result of every cut.

LEGEND:
A = Alignment feed
H = Printing area height
B = Non printable area (CUTTER - PRINT HEAD)



(Fig.B.12)

B.4 METHODS OF USAGE

B.4.1 Command sequences

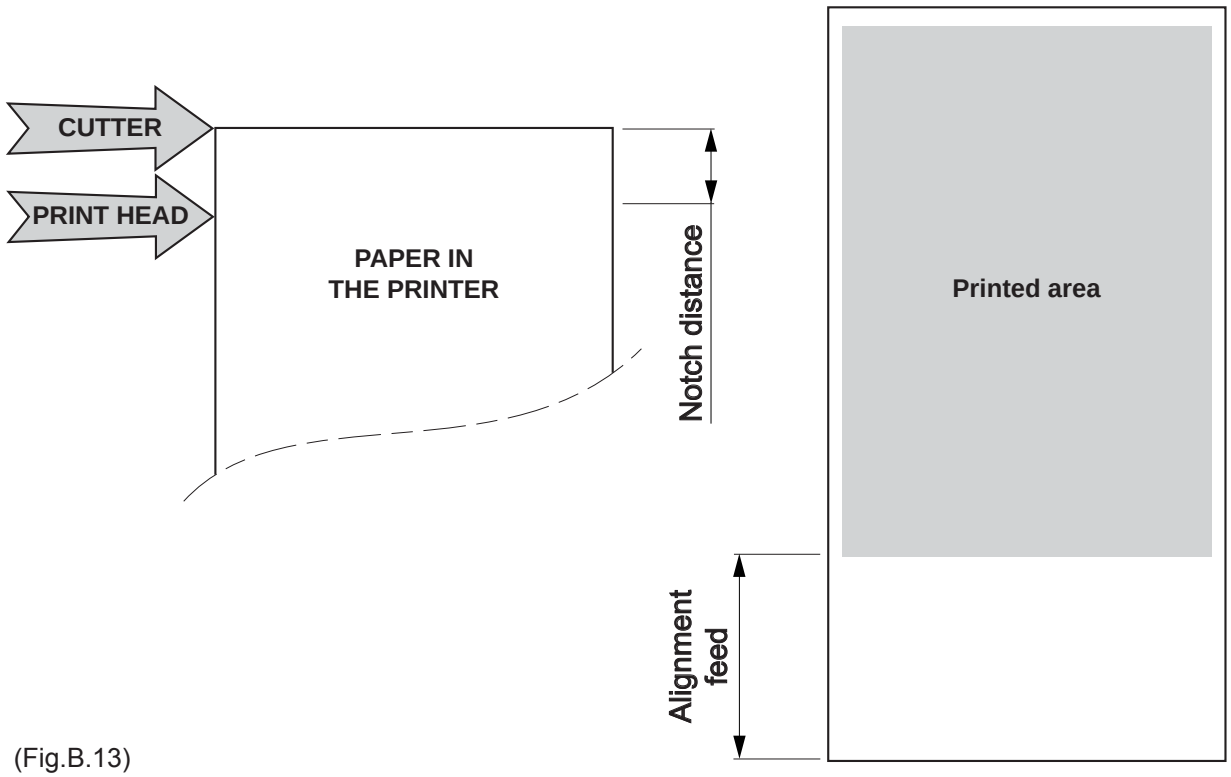
It is possible, when printing sequences of tickets, to primarily identify two different methods of operation that involve the alignment: ticket aligned at the cut and ticket aligned at printing.
Another very important aspect to bear in mind is the condition from which printing commences. In figure B.12, that shows a ticket aligned at the cut, it can be seen how every time a ticket printing begins this originates from an alignment at the cut, and therefore the distance between the start of the print area and the alignment line is equal to the head-cutter distance. The same situation applies to an alignment at printing.

B.4.1.1 Alignment at the cut

The sequence of commands to be entered when wanting to align a ticket at the cut is as follows:

1. Ticket general setting; formatting of characters, print density, margins etc.
2. Print ticket: Printing of text, logos or any other graphics.
3. Alignment at the cut command: $1D $F8
4. Cut command

The result is shown in figure B.13.



(Fig.B.13)

It is possible to see how the start of the ticket print area is not aligned, but the print starts in the rest position that the head took up at the moment the previous ticket was cut. At the end of the print area the printer has fed the paper through to align itself and perform the cut at the desired position.

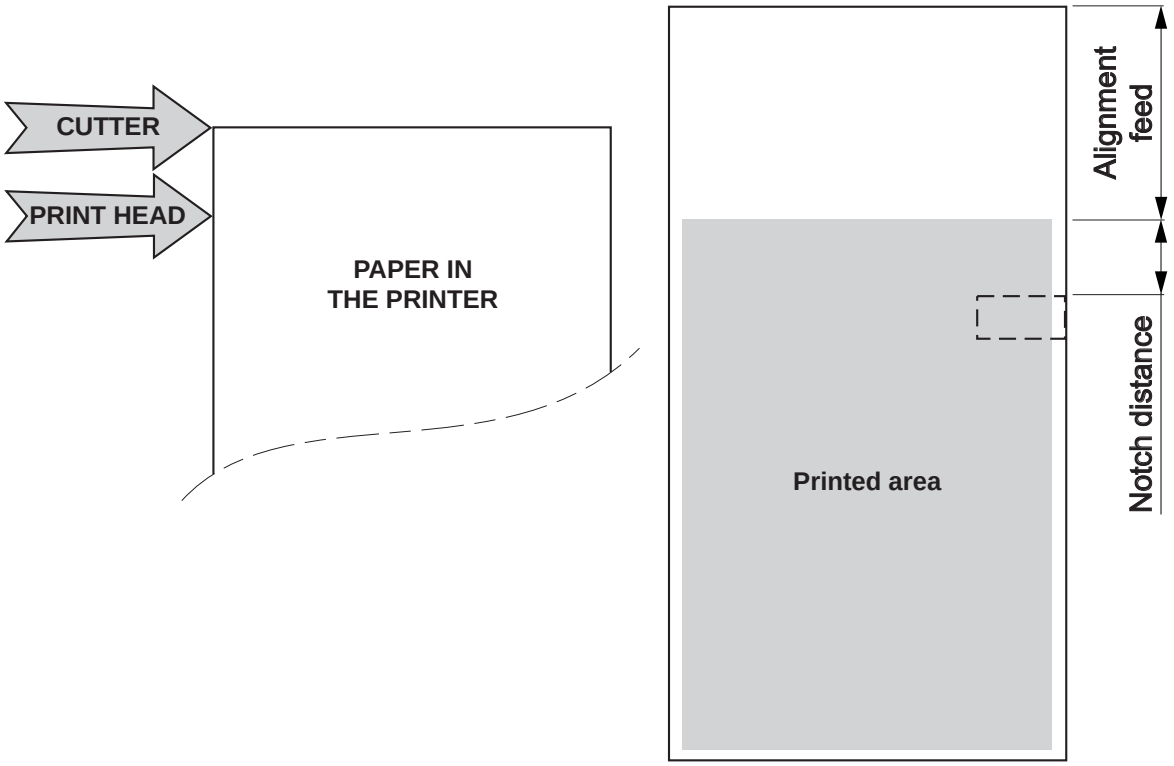
B.4.1.2 Alignment at printing

Alignment at printing requires the following sequence of commands:

1. Ticket general setting; formatting of characters, print density, margins etc.
2. Print alignment commands: $1D $F6
3. Print ticket: Printing of text, logos or any other graphics.
4. Cut commands

The result is shown in figure B.14.

Unlike the previous case, the alignment feed takes place before the start of printing, so as to align the print area in the position required.



(Fig.B.14)

Part Number : DOME-VKP80 Rev. 1.65

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